DEC 21 1935

the OIL AND GAS JOURNAL

DECEMBER 19
1935

PRICE
25 CENTS

MALONEY is pleased to announce that Maloney Bolted Steel Tanks of all A.P.I. standard sizes may now be ordered of galvanized steel.

MALONEY "Special Heavy Galvanized" Bolted Steel Tanks are in every case standard Maloney Tanks constructed of Keystone Copper Steel with all standard Maloney features and advantages—completely fabricated, and GALVANIZED AFTER FABRICATION, by the Rogers Galvanizing Company of Tulsa. Special galvanized bolts of 90,000 lbs. tensile strength and our special cloth-inserted red rubber packing are used.

Galvanizing AFTER fabrication assures that all edges including bolt holes are galvanized, permits coating of the exact weight desired, and avoids damage to the galvanized coating during fabrication.

The Rogers Galvanizing Company has specialized in galvanizing for 45 years and now operates plants at Rockford, Batavia, and Blue Island, Illinois, and at TULSA. Virgin zinc 99.9% pure, with positively no lead content, is applied by the hot-dip process, the spelter weighing 5 pounds to 100 pounds of steel.

This hot-dip galvanized coating is the best that can be produced. Prolonged treatment in muriatic bath assures extra-tight bond between steel and zinc, and the finished coating will withstand the severe Preece Test of 6 one-minute dips in copper sulphate solution.

MALONEY "Special Heavy Galvanized" Bolted Steel Tanks will afford maximum possible protection against crude corrosion. Capacities 100 to 10,000 bbls., A.P.I. Dimensions.

MALONEY TANK MFG. CO.
38 N. PEORIA
TULSA, OKLA.

PACKED IN STEEL ROUND CRATES FOR EXPORT

ONE WAY OR ANOTHER

old Santa manages somehow to get down the chimneys. He's never failed yet to

DELIVER THE GOODS

UNION Lines are like that. Regardless of difficulties, they *deliver the goods!*
Season's Greetings from

UNION WIRE ROPE CORPORATION

UNION WIRE LINES

The "ULTIMATE LOW COST WIRE ROPE"

the OIL AND GAS JOURNAL

Rates: Domestic, 1 year, $6.00; 6 months, $3.00. Canadian and foreign, 1 year, $7.00; 6 months, $3.50. All subscriptions are payable in advance

DECEMBER 19, 1935
VOL. 34, NO. 31

Extra copies of special issues are reserved for subscribers' needs and may be purchased by subscribers at the price of 50 cents per copy

TABLE OF CONTENTS

News Developments

Summary of Situation—By ANDREW M. ROWLEY 5
Sparks From the News 6
New Interest in Octane Number as Antiknock Demand Rises—By T. F. SMILEY 7
Gulf Coast Operators Drilling Deeper in Search for Reserves—By NEIL WILLIAMS 9
Interstate Compact Commission Lays Ground Work for Uniform Laws 35
Tax on Diesel Oil Offers More Problems Than Gasoline Tax—By W. H. BUTLER and G. H. FREYERMUTH ... 36
Editorials 40
News From Foreign Lands 41
Producing Horizons in Balcones Fault—By JOHN W. MERRITT 49
Geologist Predicts Output in Michigan Will Be 100,000 in Two Years 51

The Oil Industry's Record

Oil, the Modern Atlas 11
Scientific Methods of Exploration for Oil Helps Industry Meet Demands 13
Drilling Below 3,000 Feet Has Added Billions to Reserves 16
Over 41,000,000 Barrels Saved Annually by Reducing Evaporation 20
Purchases by Oil Industry Affect Country's Entire Economic Structure 23
Improved Production Methods Have Doubled Total of Recoverable Oil 24
The Oil Industry's Record (Cartoon) 27
Twelve Billion Barrels of Oil Have Been Saved in Refining 28
Abundant Supply of Improved Gasoline at Low Cost Industry's Job 30
Gasoline Taxes Since War Equals Europe's War Debts to U. S. 34

Markets and Prices

New York Market—By C. O. WILLSON 102
Group 3 Market—By T. F. SMILEY 103
Tank Wagon Markets 104
Refinery Prices 105
Crude Prices 106

Engineering and Operating

Use of Purchased Electric Power in Oil Refining Offers Many Economies—By RICHARD HENRY 52
Avoiding Emulsion Formation Is First Step in Solving Treating Problems—By R. G. RALPH 56
Number and Total Crude Capacity of Refineries Shows Large Increase 58
Operating Ideas 59
Study of Rodessa Discovery Well Data Reveals Characteristics of the Field—By L. G. E. BIGNELL 60
Flexibility of Electric Hook-up Justifies Its Use in Modern Drilling Practices—By W. C. DREYER 62
Problems From Readers—By T. F. SMILEY 63
Technical Questions—By C. K. FRANCIS, Ph.D. 64

Field Operations

West and North Texas—By L. E. BREDBERG 42
East Texas—By L. E. BREDBERG 44
Canada—By VICTOR LAURISTON 46
Rocky Mountain Area—By TOLBERT R. INGRAM 48
Michigan—By PAUL A. ELLIOTT 65
Gulf Coast—By F. L. SINGLETON 67-68
Southwest Texas—By GEORGE WEBER 70
Oklahoma—By JAMES McINTYRE 72
Eastern Fields—By STAFF CORRESPONDENT 76
Kansas—By JAMES McINTYRE 78
Central West—By GEORGE A. WHITNEY 81
California—By L. P. STOCKMAN 82
N. Louisiana-Arkansas—By J. R. CRUMPTON 85
Wildcat Operations 89-99

Additional Features

Obituaries 10
Refinery Projects and Natural Gas News 38
Pipe Line Progress and Natural Gasoline 39
Personal Paragraphs 100-101
A.P.I. Refinery Report 102
Record of Oil Securities 107
New or Improved Equipment 108-109
Chicago Market 110
Classified Advertising 110-111
Index to Advertisers 112
Oil Man's Calendar 112

Copyright, 1935, by The Petroleum Publishing Co.

A Thought on CHRISTMAS
WHEN YOUR TOUR IS OVER

WHETHER in the temporary shacks of a new oil field or in the gorgeous living room of a palace that oil money built . . . there is a holy hush in the atmosphere. It is Christmas Tide.

In the geological yesterday when in America the Equatorial waters mingled with those of the Arctic and rivers flowed down to this sea depositing layer upon layer of microscopic plants and animals . . . there was a hint of the Today when drills are piercing the floors of these receded seas in the Gulf Coast and Mid-Continent America . . . drills reaching for oil that the laboratory of nature in a millennium of time has made from these deep buried microscopic organisms.

The thought of divine purpose is awesome. We seem to be in closer communion with it at this time of year. Whether we are close to the terrifying roar following the tapping by the big drill of age-long stored up forces, or whether we are resting in quiet meditation after our tour is over . . . our thoughts are uplifted at Christmas Tide.

MAY you men in field and office enjoy good health on Christmas Day and may its joy and happiness be spread over all the New Year.

Norvell-Wilder
Supply Company

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription prices: Domestic, $6.00 a year; foreign, $7.00 a year. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Oklahoma, under the Act of March 3, 1879.

Bonuses and Higher Prices Encouraging

By JAMES McINTYRE

THE LARGEST NEW WELL of the week in the United States was completed in the Hobbs pool in Lea County, New Mexico. It started at 16,725 barrels of oil and 16,072,000 feet of gas per day, after an acid treatment.

East Texas production, as large as it is, does not come up to the demand for crude in that district, and what amounts to premiums or bonuses are being given for connections, the purchasers in these cases absorbing the gathering charge and taking care of other obligations that usually fall upon the producer.

Demand for crude became so persistent in Michigan that purchasers increased the posted price of oil produced in the midland counties of that state 10 cents per barrel, bringing the price up to $1.22 per barrel. It is claimed that the buyer demand for Michigan crude is 80,000 barrels a day, but the field has never produced within 20,000 barrels of that quantity.

California produced over 700,000 barrels daily for two days last week, the highest production in that state since March 1, 1930. All purchasing companies met the Standard of California's recent crude price advance.

Production 2,879,492
Increase 74,532

The Basal McLish sand in the Fitts pool in Oklahoma was found to be largely productive in one completed well in the past week, but it is not a dependable pay, as another well in the same formation found salt water and a third deep test recently completed missed the sand altogether.

The Anahuac field in Coastal Texas was defined on the west by a 7,141-foot test which found no pay. The feature new well of the week on the Texas Coast is in the Turtle Bay area in Chambers County.

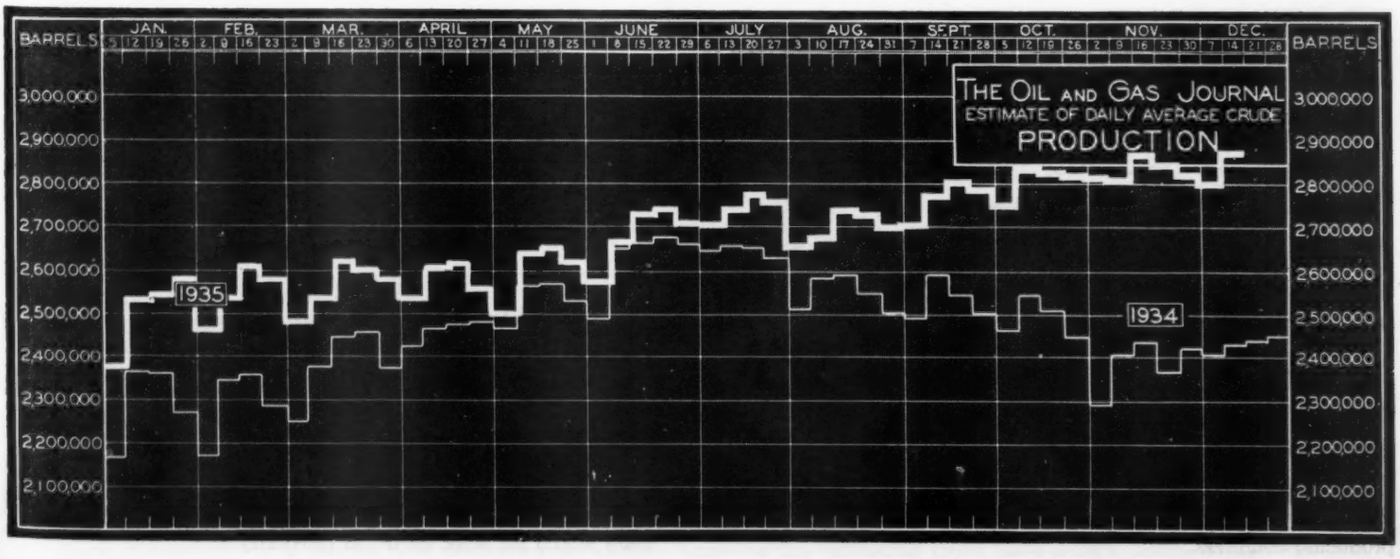
Daily Average Production for Week

	Dec. 14 1935	Dec. 7 1935	Dec. 15 1934
Oklahoma City	137,175	114,225	165,425
Seminole-St. Louis	93,575	85,000	89,650
Remainder of State	273,775	259,325	231,975
Total Oklahoma	504,525	458,550	487,050
East Texas	450,500	448,097	411,263
West Texas	159,138	159,152	130,984
North Central Texas	81,450	85,400	89,447
Texas Panhandle	62,603	58,503	58,127
East Central Texas	48,451	45,903	46,914
Gulf Coast—Texas	208,850	208,304	165,306
Southwest Texas	65,198	64,750	55,082
Total State of Texas	1,076,190	1,070,109	957,123
North Louisiana	38,155	36,845	23,670
Gulf Coast—Louisiana	127,302	124,350	83,012
Total Louisiana	165,457	161,195	106,682
Santa Fe Springs	54,750	54,500	39,100
Long Beach	76,350	73,000	65,750
Mountain View	37,300	39,750	11,600
Kettleman Hills	116,000	114,900	58,000
Remainder of State	410,100	405,600	321,300
Total California	694,500	687,750	495,750
Kansas	147,100	135,500	126,975
Arkansas	29,480	29,570	31,075
Eastern fields	104,500	105,750	103,000
Michigan	45,600	44,856	28,317
Rocky Mountain area	112,140	111,680	96,230
Total United States	2,879,492	2,804,960	2,432,202

Crude Oil Stocks in U. S.

(BUREAU OF MINES ESTIMATES)

Week ending Dec. 7, 1935	299,132,000 Bbls.
Week ending Nov. 30, 1935	299,222,000 Bbls.
Week ending Dec. 8, 1934	325,970,000 Bbls.



There must be something particularly desirable in Michigan crude or why the demand for 80,000 barrels per day in a state producing less than 50,000 barrels. The price is up a dime.

Crude stocks are down 90,000 barrels compared to the previous week. Every little helps.

Frank Phillips told Iowans the oil industry is "in the vestibule of a new era of prosperity." It has at last got through the revolving door.

Bill to regulate anthracite coal as Guffey bill does bituminous is now urged. If the bill holds let all industries look out.

A bonus by any other name is just as sweet to East Texas producers, as it is an unfailing sign of the ever-welcome scramble for crude which has always meant higher prices in the offing.

In Kansas they reverse the order and make one pool bloom where two bloomed before. A number of pools have been consolidated recently by the ubiquitous wildcatter.

Ethiopia refuses to give up the Fafan valley "because it contains oil." If so, it may be one reason why it will have to give it up.

Governor McAllister of Tennessee denounces his state's 7-cent tax on gasoline as "unjust and excessive." The governor of Florida should be told about this.

The petroleum section of the National Safety Council has named another committee to make a study of the traffic problem. The real traffic problem is the individual driver.

The Gulf Coast respectfully directs the attention of California to the fact that there are deep holes outside Los Angeles.

Dr. J. A. Shaw, Louisiana conservation department head, says his state has the greatest oil reserve per square mile of any state in the nation. Louisiana is thirtieth in area.

Capital of the Italian government's oil monopoly has been increased but what it really needs is an increase in its oil.

On the other hand Europe may think Americans do not need the war debts if they could pay as much in gasoline taxes in 18 years since the war.

England, reminded by a Briton she would occupy a very low position in the world today had it not been for available supplies of oil was further told the fate of the empire lies in the hands of the United States, Venezuela and other western oil producing countries.

Reserves of oil are estimated by the American Petroleum Institute at 12,177,000 barrels in known fields. But it is the unknown fields that upset all the calculations.

Nebraska legislature appropriated $5,000,000 for old age pensions and relief and proposes to get it in extra gasoline taxes. The Cornhusker state may have to go back to the horse and buggy stage.

The oil sanctions issue is reported to have been shelved. Well out of reach.

Master of Pennsylvania Grange says taxes on agriculture have reached limit of endurance and protests diversion of gasoline tax from highways. The politicians listen to the farmers.

If the Italian army is retreating in Ethiopia it has nothing on Sir Samuel Hoare and Premier Laval in their withdrawal from their position on oil sanctions.

Indications are public interest in the session of congress will be subordinated to interest in the Supreme Court during the next few months.

The American oil exporters appear to have known more about the international situation than Washington did.

The Independent Petroleum Association of America announcement that it is opposed to federal control legislation makes it unanimous within the industry.

California major company is reported ready to submit its interpretation of a marketing code to the Federal Trade Commission. If it gets by it may do as a model.

If some of the billions the country has to pay in increased taxation were left with the taxpayers to buy what they need there would be work for all in providing it.

New Interest in Octane Number as Antiknock Demand Rises

By T. F. SMILEY

Again the octane number is in the center of things. Nine years ago it wasn't in anything, not even the dictionary. Once having been brought out under technical sponsorship of unquestioned authority, it swiftly gained a respected place in motor fuel economy. After a while folks spoke of it with the same easy familiarity that characterized their references to sparkplugs and radiator-caps. It grew steadily in importance, but having been divested of its mystery and having become commonplace in the language of highway travel, the octane number ceased to command particular attention. Now, however, a combination of circumstances has shoved it out where refiners, marketers, motorists and automobile manufacturers are regarding it with fresh interest.

Among these circumstances are the sudden rise in demand for antiknock motor fuel accompanying the broadened buying of new cars, with a corresponding drop in the need for the lower grades of gasoline; the further shift in demand from low-octane to high-octane material certain to develop as millions of old cars are replaced by new ones built on different engineering lines; the modernization of equipment which must take place in many refineries to accommodate them to the changed motor fuel requirements; hastened disappearance of the "tin can" type of refinery.

The movement away from low-octane motor fuels has gained such impetus that the present classifications employed to denote antiknock values have lost much of their significance and revision seems inevitable. In actual practice among refiners and marketers revision already has taken place. While the official designation of third-grade gasoline is "below 63 octane" and that of the regular grade is "63 to 70," the demands of the motorist and his new car really fix the minimum octane rating for the regular or middle grade at 68 in a large percentage of the well-known house brands.

The buyer of third-grade motor fuel has become knock conscious, too, and the market for gasoline with an octane rating below 60 is steadily narrowing. Some of the material which now passes as gasoline seems destined to be classified as naphtha in a relatively short time.

Introduction of the year's new automobiles two months earlier than usual has sent thousands of antiques to the used-car lot, while similar thousands of bright new creations, embodying the latest engineering achievements, have moved resplendently out upon the road to take their places, every one of them equipped with an engine built to meet the demand for knockless performance.

For years there has been a steady trend toward engines of higher compression ratio and toward motor fuels designed to suit these engines. The movement was limited during the depression period by low buying power, which curtailed automobile sales. The old car, with its engine made to operate on the filling-station offerings of other days had to do for another year, and then another. To be sure, it got so it sounded like a drum corps when it was climbing a hill; but nothing could be done about it.

Now the pinch of hard times is relaxing. The family budget has expanded in accordance with improved income, and there's a new car in the garage—or there soon will be—a car which is not going to be fed unsuitable gasoline by its owner.

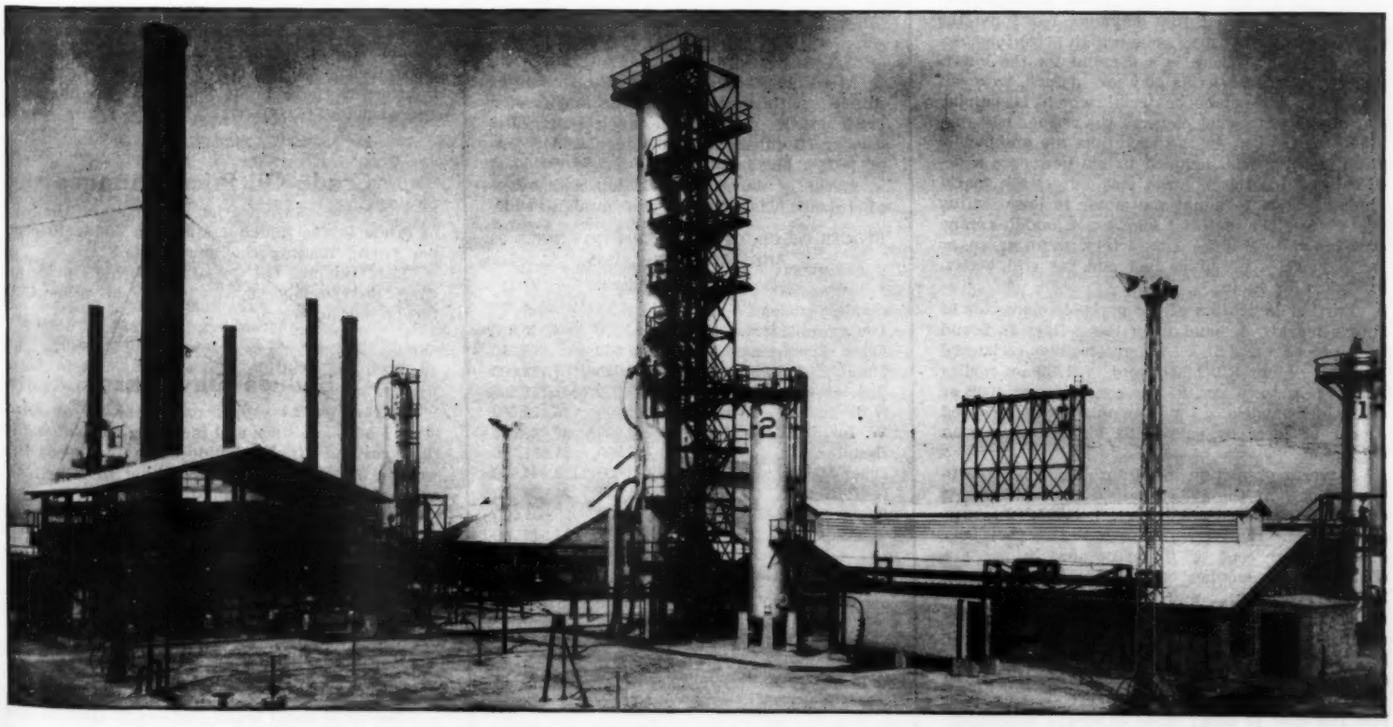
The earlier date for putting the new car models on parade and the ability of the public to buy them have joined to hasten a development which was inevitable, but which was not expected to arrive so soon, namely, the virtual lopping off of the bottom bracket of low-octane fuel, with corresponding swelling of sales in the regular and premium grades. This change in the sales department has deep-reaching implications in the refining division, for some refiners whose skimming and cracking equipment has been balanced to fill the motor fuel demands of 1932 will have to make extensive alterations to meet the needs of 1936. Furthermore, the cheaply put-together refinery seems to have no place in the era of high-octane gasoline.

It is not to be supposed that the automobile manufacturer designs an engine on advanced lines and then calls upon the oil industry to provide a suitable fuel for it or that the refiner produces a new kind of fuel and then calls upon automotive engineers to build an engine which it will run. The fact is chemists, refiners and automobile manufacturers have collaborated in the effort to bring about trouble-free motoring, with the fullest measure of power and pleasure from the family car.

While the total sales of gasoline for 1935 are expected to be in the neighborhood of 7 per cent higher than those in 1934, available information indicates that sales of premium gasoline (that with an octane rating of 76 or above) will show an increase of approximately 20 per cent, and sales of the regular grade will be some 15 per cent above those of last year.

One of the conspicuous straws showing the direction of the wind in gasoline sales is seen in recent advertisements of major refiners announcing antiknock motor fuels. One of the latest of these describes its product as "A new premium gasoline that costs 2 cents more than 'regular,' and is worth it." This action on the part of refiners points to their belief that larger sales opportunities lie in the field of high-octane material.

What has been happening in automobile fac-



Reforming unit of Dubbs type processing up to 4,500 barrels a day producing motor fuels of high octane value

tories in this connection is revealed by figures showing how the average compression ratio of passenger cars has been rising. This course in engine construction had gone so far by 1934 that many of the car models of that year and of 1933 began to knock annoyingly after they had been run a few thousand miles and carbon deposits had begun to form. The reason for this lay in the fact that while these cars for the most part had been built to perform well on the regular grade of gasoline as they came fresh from the factory, the carbon deposits increased the compression ratios to such a degree that motor fuel of higher anti-knock value was required.

The average compression ratio of all American cars listed in trade publications in 1925 was 4.40 to 1. In 1932 it had risen to 5.29. In 1933 it went to 5.57, in 1934 to 5.72, in 1935 to 5.99, and the average for the new 1936 models is 6.12.

Of interest in this connection is the fact that of each 100 cars sold in the United States last year 72 were either a Chevrolet, a Ford or a Plymouth, and the average compression ratio of these three cars was 6.21 to 1, compared with the 5.99-to-1 average of all cars. The 1936 models of these three makes have an average compression ratio of 6.33 to 1, compared with the all-cars average of 6.12 to 1.

The compression ratio is simply a measure of the pressure applied to the gasoline vapor in the combustion chamber of an engine before it is ignited by the sparkplug. For example, if the piston when it is at the top of its stroke squeezes the vapor into a space one-fifth as large as that occupied at the bottom of the stroke, the engine has a compression ratio of 5 to 1, often expressed simply as 5.

High Octane

The more compactly gasoline is compressed in a motor the greater the power it develops from a given quantity of gasoline. Sudden and uncontrolled explosion of the gasoline vapor in the combustion chamber, instead of a smooth and steady burning of the charge, is what causes the knock, which impairs power besides causing overheating and excessive vibration. High-octane gasoline delivers its power to the piston in an even pressure instead of a sharp hammer-like blow, damaging to crankpins and crankshafts. These are things which the motorist is beginning to understand and which lead him away from the cheapest grades of gasoline.

Nothwithstanding the clearly defined movement in the direction of higher-octane motor fuel, the refiner is not overlooking the owner of a car of ancient model nor is the automobile manufacturer overlooking the fact that he must not force the buyer to pay what may seem a high price for gasoline. So long as there is a demand for the lower-octane motor fuels (this may not include, however, extremely low-octane material which is passing out of the motor-fuel picture) the refiner will continue to make it. In the meantime the automobile manufacturer has included in his new cars a device by which the motorist may adjust the spark-timing system to adapt the motor to lower-rating fuels. Thus the motorist may use a middle-octane gasoline and get quite satisfactory performance, or he may use a premium fuel and get still better. He takes his choice.

Further indication of the probable character of future market demand upon the refiner is found in the fact that of 21,584,193 automobiles registered in 1934 all but 3,382,509 were of 1933 or earlier make. That is to say, 85 per cent were of 1932 or still older models, all presumably to be replaced sooner or later by cars with higher-compression engines.

A recent prediction by Motor Magazine was to the effect that the 1935 production of all classes of motor vehicles might reach 3,750,000 units. Since a conservative estimate indicates that only about 15 per cent of the cars now in use are equipped with engines of a compression ratio of 5.57 to 1 or higher and that the others will be replaced within a relatively short time by cars requiring high-octane gasoline in order to get the best performance out of them, it becomes plain that the demands upon the refiner are going to be widely different from those formerly resting upon him and that in many cases extensive modernization of plants will be imperative.

East Texans Expect Increased Allowable for that Field

AUSTIN, Tex., Dec. 18.—V. E. Cottingham, the Railroad Commission's chief engineer, today recommended reduction of the East Texas allowable by 10,000 bbls. to 425,000 bbls. daily for January while a number of East Texans urged an increase to 600,000 bbls.

Nominations for East Texas crude oil for January totaled 458,000 bbls. daily, the Railroad Commission announced.

Purchase nominations filed with the commission indicated a January market demand of 550,475 bbls. daily for East Texas crude, compared with a current allowable of 435,000 bbls. and December nominations of 458,000 bbls.

The total for the state was 1,286,857 bbls. compared with an allowable calculated by the commission at 106,060,000 bbls. on December 1.

Nominations by other districts were (in barrels): West Texas, 191,689; Southwest Texas, 77,366; East Central, 29,116; Gulf Coast, 250,218; Conroe, 44,750; North Texas, 56,984; Panhandle, 56,003, and West Central, 30,250.

The commission's engineer recommended the East Texas reduction, he said, "because reservoir pressures are constantly dropping off," showing that in the past 12 months "average withdrawals were too high."

Average bottom-hole pressure December 12, he said, was 1,206.2 pounds, a drop of 3.8 pounds since November 12, or .292 pounds per 1,000,000 bbls. produced.

J. S. Hudnall of Tyler, geologist, was the East Texans' chief witness in urging an increase to 600,000 bbls. daily. He suggested the increase should be spread over several months, allowing a monthly increase of about 25,000 bbls. daily.

Proceedings were interrupted when Hudnall estimated "hot" oil production at 15,000 to 20,000 bbls. daily and the commission ordered men Hudnall named as sources of his information subpoenaed to appear.

The East Texas delegation was confident the commission will grant an increase above the 430,000-bbl. daily allowable for the field, which represents one-tenth of 1 per cent of the potential of existing wells. They contended such an increase will not injure the field, but will stimulate drilling of more wells than the present 19,300 in the field and attain greater ultimate recovery. One of the three commissioners, Lon A. Smith, already has declared his purpose to try to raise the allowable. F. W. Fischer, attorney who put on testimony, contended that unless production is increased the price of oil will be raised from $1 to $1.35 a barrel.

After the close of the hearing it was believed the Railroad Commission's order will disallow the plea for increase in the East Texas field and will order a reduction below present 435,000-bbl. daily allowable for the field.

Crude Stocks

WASHINGTON, Dec. 16.—The Bureau of Mines report stocks of domestic and foreign crude at the close of the week ending December 7 totaled 299,132,000 bbls., a decrease of 90,000 bbls., an increase of 64,000 bbls. in stocks of domestic crude but a decrease of 154,000 bbls. in stocks of foreign crude.

STOCKS OF CRUDE PETROLEUM NOVEMBER 30 AND DECEMBER 7, 1935

(Barrels of 42 gallons)

Grade of crude oil	Nov. 30	Dec. 7
Pennsylvania grade	4,521,000	4,520,000
Other Appalachian	841,000	840,000
Lima-N.E. Ind.-Mich.	1,242,000	1,179,000
Illinois-S. W. Indiana	11,135,000	11,108,000
N. Louisiana & Arkansas	10,180,000	10,123,000
W. Tex. & S.E. N. Mex.	29,287,000	28,943,000
East Texas	21,785,000	21,681,000
Other Mid-Continent	132,192,000	132,944,000
Gulf Coast	25,004,000	24,838,000
Rocky Mountain	26,597,000	26,601,000
California	33,477,000	33,548,000
Domestic crude	296,261,000	296,325,000
Foreign crude	2,961,000	2,807,000
Total crude*	299,222,000	299,132,000

* Represents approximately 98 per cent of total stocks in the United States, exclusive of lease (producers') stocks.

Russians to Supply Kerosene in Far East to Socony

NEW YORK, Dec. 16.—The Socony-Vacuum Oil Co., Inc., is reported to have closed a contract with the Russian oil trust for the kerosene the former will require in the Near East for 1936. The amount probably will be about 500,000 bbls. at a price of $1,000,000, depending upon quotation at delivery. It is understood negotiations are in progress for the purchase of other oil products by Socony-Vacuum.

Although Socony-Vacuum has purchased its kerosene requirements for the Near East from the Russians for 12 years, supplies in 1935 were not obtained under a contract but by the purchase of separate cargoes. With the improvement of refinery facilities and an increase in production, it is reported by the New York Times that the Russians have started to renew contracts with their customers on the basis of yearly supplies.

The new contract, it is believed, will not interfere with the negotiations between the Russians and the international oil group for the purchase of the Soviet's excess supplies.

On the other hand, it was suggested the contract showed an inclination on the part of the Russians to continue supplying their customers and not being anxious to enter into a contract to sell their excess products to one group. However, it was felt the international group probably would be willing to exclude one or two of the Soviet's best customers from such agreement.

The outcome of the negotiations of the international oil companies now under way in Europe is said to be difficult to forecast. It is understood that from a standpoint of dollars and cents an agreement could be reached easily, provided political issues were eliminated.

The Socony-Vacuum contract, the first for a definite period since dissolution of the international oil conference here in 1932, is said to indicate a distinctly better feeling between Socony-Vacuum and the Soviet Union.

For the first nine months of this year, it was announced Russians had placed orders in this country for some $33,000,000 of products. For the last quarter of the year it is estimated orders will approximate $15,000,000.

Crude Oil Price Changes

The Pure Transportation Co. advanced the price of crude in the midland Michigan fields 10 cents per barrel making the new price $1.22.

The Standard Oil Co. of California's price advance on December 6 was met by all other California purchasers.

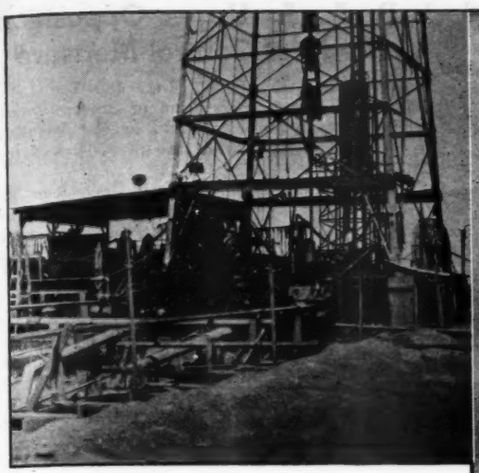
Reduce Ethyl Price

Retroactive to supply on shipments of tetraethyl lead made since and including November 1 of this year the Ethyl Gasoline Corp. announced this week a 7 per cent price reduction in Ethyl "Q" and aviation fluids. The old price was .3 cent per cubic centimeter while the new price is .28 cent.

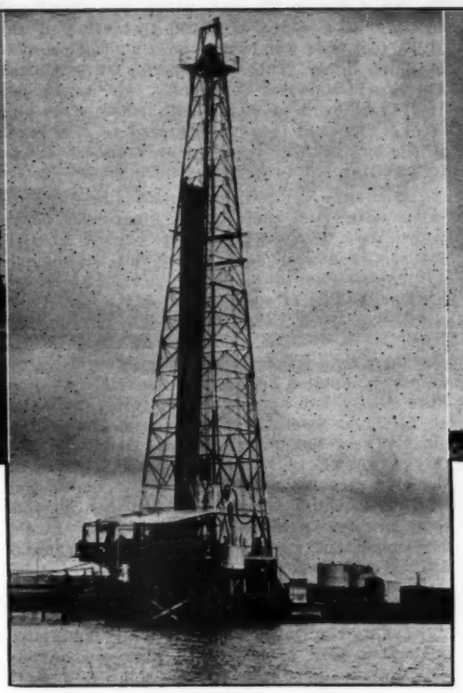
Magnetic Storm

Tucson, Ariz., observatory of the U. S. Coast and Geodetic Survey report a moderate magnetic storm started at 3 a.m. (C.S.T.) on December 14 and ended at 11 a.m. (C.S.T.) December 16. Telegram follows:

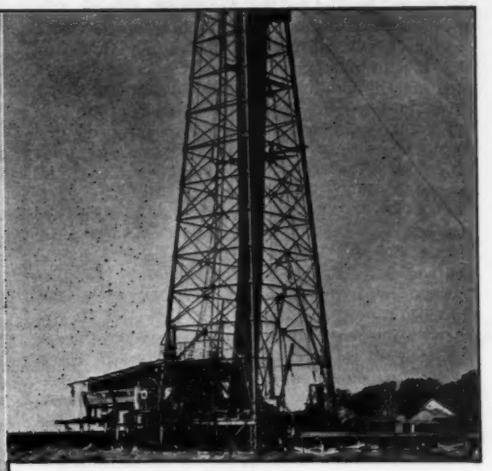
"Moderate storm began fourteenth. Nine. Ended sixteenth. Seventeen. Central Time."



Setup of Shell Petroleum Corp. No. 1 Jarnigan, Roanoke, Jefferson Davis Parish, La., drilled to 10,750 feet, deepest test on Gulf



Stanolind Oil & Gas Co. No. 2 State, drilled on piling in Dickinson Bayou, Dickinson field, Galveston County, Texas



Magnolia Petroleum Co. No. 1 Broussard, wildcat in Cameron Parish, Louisiana, drilled to total depth of 9,499 feet

Gulf Coast Operators Going Deeper in Exploration for Petroleum Reserves

By NEIL WILLIAMS

HOUSTON, Tex., Dec. 16.—Gulf Coast operators have been going steadily deeper in exploration for additional petroleum reserves, and as greater depths have been reached, each year has witnessed an increasing amount of drilling at successively lower levels. Ten years ago in this area, 6,000 feet was looked upon as very deep drilling—no test had ever gone below that depth and when late in 1925 a hole at Lockport, Louisiana, was drilled to 6,107 feet an exceptional record was set. Today, new development is being looked upon in terms of 8,000-foot, 9,000-foot and even 10,000-foot wells.

The extent to which coastal operators have gone in recent years in carrying on their exploration for new production to the deeper horizons is indicated in the fact that so far 186 tests have been drilled to depths below 8,000 feet. Of significance also is the fact that of these 186 tests, 87 have gone below 8,500 feet; of these 41 have been below 9,000 feet; and four of these below 10,000 feet.

Normal Now 8,000 Feet

In the list of 186 tests below 8,000 feet, 28 fields from one end of the district to the other are represented, and 36 of the deep tests have been on scattered wildcat prospects. Few operators in the Gulf Coast district proper start a test in any of the newer fields or wildcat prospects without expecting to drill at least to 8,000 feet.

Most of this deep drilling has been within the last two years, and particularly during 1935. At the close of 1934, a year ago, only 65 tests had been drilled below 8,000 feet. With a total now of 186 tests, 121 additional holes were drilled below that depth this year, or nearly twice as many as were drilled in all the previous years put together.

The first test on the Gulf Coast to reach a depth of 8,000 feet was Yount Lee Oil Co. No. 4 Chambers at Barbers Hill, Chambers County, which was abandoned as dry at a total depth of 8,148 feet in October, 1929. The following month a second 8,000-foot test was given the district when the same company's No. 4 Crowley at Jennings, La., was abandoned at a depth of 8,250 feet.

During the next year, 1930, four more 8,000-foot tests were added to the list, two of which were drilled to below 8,500 feet. Since then the number has been mounting conspicuously. In 1932 the first test to below 9,000 feet was drilled, this being Edwin M. Jones No. 2 Mitchell, which was abandoned at a total depth of 9,167 feet after testing water. At the close of 1932 a total of 11 tests has been drilled to depths below 8,000 feet. The following year 11 more such tests were added, with two more 9,000-foot holes being put down, making a total of three of the latter.

PRODUCNG WELLS ON GULF COAST BELOW 8,000 FEET BY FIELDS

Fields	10,000 feet	9,000-10,000 feet	8,500-9,000 feet	8,000-8,500 feet	Total
Bosco	0	3	43	3	49
Dickinson	0	5	1	12	18
Lafitte	0	3	0	0	3
Old Ocean	0	0	2	0	2
Roanoke	0	0	7	0	7
*Sheppards Mott	0	0	1	0	1
Tepetate	0	0	1	4	4
White Castle	0	0	1	0	1
Total	0	11	55	19	85

*Not commercial producer.

The depth of 10,000 feet was reached for the first time late in 1934 in a test drilled by Superior Oil Producing Co. at Bosco, La. This test was abandoned in January of 1935 at a total depth of 10,005 feet. In 1934 the list of 9,000-foot tests also was materially swelled with the addition of 11 tests drilled below that depth, exclusive of the one 10,000-foot hole. At the close of that year 65 tests had been drilled to depths below 8,000 feet, as compared with 22 at the close of 1933.

As a result of this deep exploration, production below 8,000 feet has been established in eight fields. So far there is no production below 10,000 feet, but in three of the eight fields there is production below 9,000 feet; four fields have production in sands between 8,500 and 9,000 feet; while in three fields there is production between 8,000 and 8,500 feet. There is a total of 85 wells in these eight fields producing from depths below 8,000 feet.

Deepest Production

The deepest production on the coast is in the Lafitte (Bayou St. Dennis) field, in Jefferson Parish, Louisiana, where The Texas Co. has three producing wells in sands from 9,550 to 9,640 feet. The field, which is owned entirely by the above company, was opened last May, the first test drilled being the discovery well. Bottom of this well was 9,572 feet. Two additional wells which have been drilled were completed in September, one at 9,568 feet and the other at 9,640 feet. A fourth test now is drilling. The field is located in low, marshy land and development has been accomplished under handicaps.

Other fields with production below 9,000 feet

are Bosco, located on the Acadia-St. Landry Parish line, in Louisiana, and Dickinson, Galveston County, Texas. It was in the former that first 9,000-foot production on the coast was established, Superior Oil Producing Co. No. 1 Johnson, completed in October, 1934, in a sand at 9,092-9,107 feet, being the first well. There now are three producing wells below 9,000 feet at Bosco. At Dickinson there are five wells below that depth, all completed this year. Incidently, the first production below 8,000 feet also was obtained at Bosco in Superior Oil Producing Co. No. 1 Elize Mire, completed in May, 1934, in a sand at a total depth of 8,085 feet.

Fields with production in sands between 8,500 and 9,000 feet include Bosco with 43 wells; Dickinson with one well; White Castle, Iberville Parish, Louisiana, one well; Roanoke, Jefferson Davis Parish, Louisiana, seven wells; Old Ocean, Brazoria County, Texas, two wells; and Shepherds Mott, Matagorda County, Texas, one well. In the latter, commercial production has not been established as yet but a well drilled by H. M. Smith to a depth of 8,853 feet encountered a number of sands and at that depth produced some oil. Bosco and Dickinson also are producing from sands between 8,000 and 8,500 feet, as well as sands between 7,000 and 8,000 feet. The newest field in which production has been established below 8,000 feet is at Tepetate, where Continental Oil Co. has four wells in an 8,300-foot horizon, all completed since last August.

The most extensive deep production is at Bosco, where there are 49 producing wells below 8,000 feet. A total of 60 tests have been drilled in that field below that depth, of which 55 have been below 8,500 feet, five of these being below 9,000 feet and one below 10,000 feet.

Below 10,000 Feet

That one of the next steps will be to find production below 10,000 feet is almost certain. In wells which have been drilled to that depth, both at Bosco and at Roanoke, sands have been encountered which have shown considerable gas. One of these wells, Shell Petroleum Corp.'s No. 1 Jarnigan, tried to blow out at a depth of 10,001 feet. The gas pressure was killed successfully but the drill pipe stuck. Unable to clean the hole at that depth, the operators plugged back to 7,487 feet, sidetracked, and drilled a new hole back to the 10,000-foot horizon, and to a total depth of 10,750 feet, where drill pipe again became stuck. The hole then was abandoned.

This was one of two 10,000-foot tests drilled at Roanoke, the other being Humble Oil & Refining Co. No. 1 Nelson Thomas, which was abandoned in July at a depth of 10,056 feet. One of the 10,000-foot tests was located on a wildcat prospect at Baton Rouge. This was Superior Oil Producing Co. No. 1 Duplanter-Community, which was carried to a depth of 10,360 feet, where drill pipe stuck. The hole then was plugged to test sands which had been encountered at shallower levels, but, getting salt water, was abandoned.

In addition to tests which have been drilled below 8,000 feet, there are a great many more which have been drilled to depths close to 8,000 feet, or below 7,000 feet, and in this list there is a large number of producing fields. There has been production at such depths on the Gulf Coast since 1929, when Yount Lee Oil Co. discovered a 7,400-foot horizon on the southeast flank of the Jennings field. Previous to that, however, the deepest production had been at Sweet Lake, where Pure Oil Co. had a well at 5,897 feet. Production at 7,000-foot levels includes such fields as Jennings, Sweet Lake, Iowa, Bosco, Dickinson, Bay City (Van Vleck), Louise, Anahuac, Hackberry, Roanoke, Dog Lake, Buckeye and others. So general has drilling below 7,000 feet become that there are few fields or areas, especially in the development of the last several years, in which drilling is not below that depth.

It is conceded by most operators that as far as shallow reserves are concerned, the Gulf Coast has been as fairly well exploited. While additional production may be uncovered at comparatively shallow horizons, the industry is going to have to look to the deeper horizons for its new oil, these horizons to be at 8,000-foot, 9,000-foot, 10,000-foot and even lower depths, and at the present rate of increasing drilling at successively lower depths, it no doubt will be but a short time until drilling at these depths will be just as general as it now is at 6,000-foot and 7,000-foot depths.

TOTAL TESTS BELOW 8,000 FEET DRILLED ON GULF COAST BY FIELDS

Fields	Below 10,000 feet	9,000-10,000 feet	8,500-9,000 feet	8,000-8,500 feet	Total
Anahuac	0	0	1	0	1
Barbers Hill	0	0	0	1	1
Bosco	1	5	50	4	60
Buckeye	0	1	1	0	2
Cameron Meadows	0	1	0	0	1
Cleveland	0	0	1	0	1
Dickinson	0	8	4	14	26
East Hackberry	0	0	0	3	3
Edgerly	0	0	0	1	1
Esperson	0	1	1	1	3
Gillis	0	1	1	1	3
Gueydan	0	1	0	1	2
Hastings	0	0	1	0	1
Humble	0	0	0	1	1
Jefferson Island	0	0	1	0	1
Jennings	0	0	4	1	5
Lafitte	0	3	0	0	3
Louise	0	0	0	2	2
Old Ocean	0	0	2	0	2
Pledger	0	0	0	0	1
Refugio	0	1	0	1	2
Roanoke	2	5	8	1	16
Sheppards Mott	0	0	1	0	1
Sweet Lake	0	0	0	2	2
Tepetate	0	1	1	4	6
Thompson	0	0	1	0	1
Van Vleck	0	0	1	0	1
White Castle	0	0	1	0	1
Wildcats	1	13	7	15	36
Total	4	41	87	54	186

WELLS BELOW 8,000 FEET DRILLED ON GULF COAST

Depth	Total tests drilled	Total wells producing	Total abnd. or comp. in shallow sands	Active
Below 10,000 feet	4	0	4	0
9,000 to 10,000 ft.	41	(a)11	(c)26	4
8,500 to 9,000 ft.	87	(b)55	(d)27	7
8,000 to 8,500 ft.	54	(x)19	(e)30	7
	186	85	87	18
Total 8,000 to 9,000 ft.	141	74	57	14
Total below 9,000 ft.	45	11	30	4

(a) All completed in 1935 except one (1934).

(b) Includes two wells drilled below 9,000 ft. and plugged back.

(c) Of total of 26, two wells producing at depths 8,500 to 9,000 feet, one 8,000 to 8,500 feet, three above 8,000 feet.

(d) Of total of 27, one producing 8,000 to 8,500 feet, four above 8,000 feet.

(e) Of total of 30, six producing above 8,000 feet.

(x) Includes one well drilled below 9,000 feet and plugged back; one well drilled to between 8,500 to 9,000 feet, and plugged back.

***WELLS DRILLED ON GULF COAST BELOW 8,000 FEET BY YEARS**

Depth	1929	1930	1931	1932	1933	1934	1935
Below 10,000 ft.	0	0	0	0	0	1	4
9,000 to 10,000 ft.	0	0	0	1	3	14	41
8,500 to 9,000 ft.	0	2	2	3	5	23	87
8,000 to 8,500 ft.	2	4	6	7	14	27	54
Total	2	6	8	11	22	65	186

* Represents number of wells at respective depths at close of each year.

Sample California Code

LOS ANGELES, Calif., Dec. 16.—Pacific Coast oil leaders are waiting the Federal Trade Commission's interpretation of a plan worked out by one large marketing company to apply to its own business. If the plan is given Federal Trade Commission approval, it may serve as a model for other companies and may result further in the reorganization of marketing agency along voluntary lines.

I. P. A. A. Urges Opposition to Federal Control Measure

WASHINGTON, D. C., Dec. 18.—The Independent Petroleum Association of America urges the industry to join in a fight against inclusion of the oil industry within the provisions of the Guffey coal act.

"This would establish over the petroleum industry a form of drastic federal control such as has never yet been proposed by any responsible agency," Russell Brown, general counsel of the association, reported to President Charles F. Roeser.

Mr. Brown said that he has been authoritatively informed the National Coal Association has created a special commission to urge upon congress extension of the Guffey act to the oil industry because of the increasing competition between fuel oil and coal. The committee is preparing data to be submitted to congress.

Oil Men Get Thrill

Bob Morris, in charge of the Burkhead, lease, north of Woodsfield, Ohio, and Dick Masters, oil well shooter, of Woodsfield, had, for them, an unusual experience. Mr. Morris was cleaning out a well, which involved drilling up some broken tubing in the bottom of the well.

On Monday, November 4, while thus engaged in drilling, smoke began pouring out of the well, indicating something seriously wrong, as no such occurrence had ever happened in the experience of the men in charge. The drilling tools were pulled out and a bailer lowered. Hot fluid and charred chunks of sand proved a fire was burning in the bottom of the well.

The men were greatly puzzled as they knew that there can be no fire without the presence of oxygen. It was then remembered that air had been forced into the sand in that territory for years, and therefore oxygen was abundantly present in the porous sand.

Dick Masters, the well shooter, was summoned and witnessed what never had occurred in his long experience of shooting oil wells. However, he believed a charge of dynamite would put out the fire which had burned for three hours, and it did, as the smoke soon ceased issuing from the well.

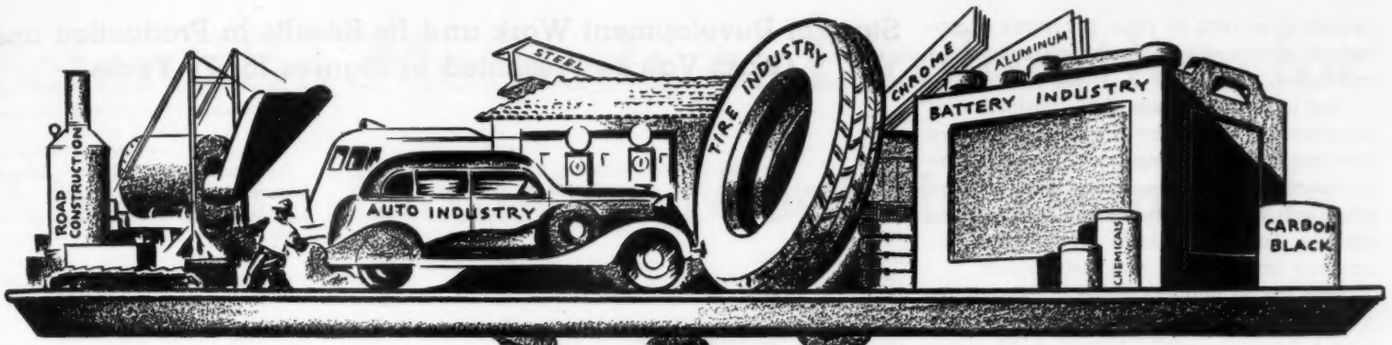
Work was resumed and on the following Saturday the well again caught fire similarly and burned for five hours before it was extinguished as before. On Wednesday it caught a third time, and when Mr. Masters arrived the smoke was so dense in the rig that he could not see the casinghead, but had to feel his way to the opening in which to drop the "go-devil" to set off the extinguishing charge of dynamite. When Mr. Masters approached the well the last time, and was yet a mile away, he saw a column of smoke issuing from the casing in the well, resembling coal smoke from the smokestack of a coal-burning boiler.

OBITUARY

A. B. BURNS, West Coast manager at Los Angeles, Calif., for the Dearborn Chemical Co. until recent illness caused his retirement, passed away December 14. Mr. Burns leaves a large number of friends in the oil industry due to his long representation of the Dearborn Chemical Co.

CHARLES GRANT TIBBENS, 67, connected with the oil business since 1880, the last 33 years in Tulsa, died Monday night. Born in Pennsylvania, July 20, 1868, Tibbens began work in the oil fields when 12 years old, working for the late John McEwen. After a few years of service with the Standard Oil Co. he became an independent operator with interests successively in Pennsylvania, Ohio, Illinois, Wyoming and Oklahoma.

E. M. WALTERS, assistant sales manager of the Ethyl Gasoline Corp., and Dewey L. Noyes, test pilot for the company, were instantly killed in an airplane accident at Munda, near Rochester, N. Y., December 11. Mr. Walters had been connected with the corporation for several years and was widely known in petroleum refining and marketing circles.



Oil, the Modern Atlas

All the world is talking oil. It has suddenly discovered that without oil modern war is impossible. A little further thought would show also that without the oil industry present day civilization would have been impossible.

Oil, itself, could not have accomplished all it has if the oil industry had not conserved and multiplied the supply to meet the constantly increasing demand for power and lubrication. If the man who makes two blades of grass grow where one grew before is a benefactor of the race, how much more so the men who have made one barrel of oil go as far as two?

It is the purpose of this series of special articles to show to the industry itself and to the public at large just how much the industry has contributed to the making of the modern world as we know it.

A summarization of the wealth added to the United States due directly to the development of the oil industry provides some stupendous and even staggering figures.

Begin with the 17,500,000,000 bbls. of oil produced which, modestly estimated at an average of $1.22 a barrel, added over $21,000,000,000 to the national wealth. The value of the products of petroleum refining in one year has been as high as $2,639,000,000.

The oil business affords employment directly to over a 1,000,000 workers and its own payroll is over $1,250,000,000 a year. It pays in direct taxes or there is collected upon its products another total of $1,046,000,000 a year.

Without the oil industry to supply motor fuel and motor oil there could have been no vast automotive industry as we see it today. Since the introduction of the motor car in this country the American people have bought approximately 60,000,000 cars valued at $42,000,000,000 wholesale or around $700 a car. Actually the retail bill which the motoring public paid swelled this immense total by several more billions of dollars.

The tire industry, one development of the oil and automotive industries, produced products valued at more than a $1,000,000,000 last year which was far from a record. In normal years it gives employment in the manufacture of tires and inner tubes to 80,000 workers. The automotive factories employ in normal years over 300,000.

Speaking of employment made possible primarily only by the development of the oil industry the Automobile Manufacturers Association reports that a total of 1,121,000 persons were employed in sales and services connected with motor transportation in 1934. It reports a total of 2,600,000 truck and bus drivers who without a supply of gasoline and oil could not have been so employed.

The major part which oil plays in modern industrial life and employment may be more fully realized by considering some of the effects in detail. The manufacture of storage batteries is a $100,000,000 a year business. Spark plugs mean around $15,000,000. Automotive generators for battery charging and automotive starter motors have run as much as $61,000,000 a year. The manufacture of cotton tire duck and tire fabric has meant as much as $110,000,000 worth of business to the mills in a twelvemonth.

The manufacture of aircraft, turning out products valued at between $50,000,000 and $75,000,000 a year has also created employment for approximately 60,000 persons.

Not least important is the fact that automobile insurance premiums amounts to $410,000,000 annually, a business that would have been non-existent but for the oil industry. The losses paid, incidentally, have been over $250,000,000,000 in one year.

Put on a percentage basis by the Automobile Association the oil industry by giving power to the automobile has created a market for 21 per cent of the finished rolled steel and 4 per cent more for steel for highway construction; a market also for 75 per cent of the rubber production; 70 per cent of the plate glass made; 40 per cent of the upholstery leather; 40 per cent of the mohair; 39 per cent of the lead; 30 per cent of the nickel; 15 per cent of the aluminum; 18 per cent of the copper; 13 per cent of the tin; 12 per cent of the zinc; 8 per cent of the hardwood; as well as large quantities of paint and lacquer, cloth, hair and padding, chemicals, brake linings and electric supplies.

A $1,000,000,000 a year is being spent on highway construction and maintenance which would not have been possible without the oil industry to furnish motive power to propel vehicles over these roads, create a public demand for their building and furnish the means to construct them through gasoline taxation. The construction of these roads furnishes employment to 330,000 workers directly. The United States Bureau of Public Roads calculates that 1,350,000 persons find employment as a result of highway work, approximately 550,000 on construction and maintenance and 800,000 in producing and transporting materials and equipment for highway construction and in administration and supervision.

It requires no stretch of the imagination to see that all this business and employment and wealth thus created is productive of yet more trade and employment as the earnings of these various elements enter the channels of general business.

Furthermore this is not one time business that has been generated from oil. By far the greater part of the factors enumerated are re-

peated from year to year, providing a continuous stream of wealth and employment—and taxes.

Nor is mention made of the business and employment spread by the convenience of gasoline propelled transportation which stimulates consumption by accessibility to markets, making the city the neighbor of the farm and the farm the suburb of the city, and carrying trade to the remotest districts.

Had the oil industry failed to develop as it has, had it permitted supply to lag the least behind demand, all this could never have been accomplished today. If we had continued in the horse and buggy era all this business, this employment and this wealth would not have been created.

The essential importance of oil in creating and continuing our present civilization has been startlingly brought home to the world by recent international developments. It is admittedly indispensable in modern warfare. It is equally indispensable in maintaining peace time progress.

Dependence on Oil

This was strikingly emphasized by a British authority in addressing a recent meeting of a representative body of Englishmen in London.

Col. W. A. Bristow, M.I.E.E., F.R.Ae.S., chairman of Low Temperature Carbonization, Ltd., reminded the Royal United Service Institution that the advances made in engineering, based upon the use of oil, "would have relegated Britain to a very limited position in the world if those great supplies of oil had not been made available."

He pointed out that about half the crude and refined products imported into the United Kingdom last year came from Iran, Iraq, Rumania, Russia and the Netherlands East Indies, all transported normally over routes that would be endangered by hostile aircraft in case of war. He cited the Red Sea, Suez Canal, the Bosphorus and the Dardanelles and the Persian Gulf as danger spots while the Mediterranean held the menace of submarine attack.

The alternative for Iran and East Indies oil was a sea voyage around the Cape of Good Hope, which entailed a return journey of 14 weeks.

The other half of Britain's oil supplies came from the United States, Venezuela, Mexico and the West Indies, in whose hands, he said, "it would appear the fate of the British Empire would probably lie."

Colonel Bristow added that nations possessing oil were beginning to be conscious of their power through control of this invaluable product. It suggested to some of his hearers the possibility that the nationalistic policies of countries without oil could have been emulated by some of those who had it.

The picture of England relegated to a very low position in the world of today if supplies of oil had not been made available was a remarkable illustration of what oil means to the modern world.

Story of Development Work and Its Results in Production and Gross Values Presented in Figures for 77 Years

Year	Record of wells drilled in the United States 1859-1935: Oil	Gas	Dry	Total	Production in the United States and value of the oil: Production in thousands of bbls.	Value at wells: Total (thousands of dollars)	Value at wells: Average per barrel
1859	1	.....	1	2	2	$ 32	$16.00
1860	201	.....	39	240	500	4,800	9.60
1861	190	.....	57	247	2,114	1,036	.49
1862	322	.....	63	385	3,057	3,210	1.05
1863	488	.....	107	595	2,611	8,226	3.15
1864	951	.....	181	1,132	2,116	20,897	9.87
1865	899	.....	378	1,277	2,498	16,460	6.59
1866	795	.....	347	1,142	3,598	13,455	3.74
1867	789	.....	467	1,256	3,347	8,067	7.41
1868	862	.....	202	1,064	3,646	13,217	3.63
1869	986	.....	696	1,682	4,215	23,730	5.63
1870	1,002	.....	637	1,639	5,261	20,504	3.90
1871	1,005	.....	447	1,452	5,205	22,591	4.34
1872	768	.....	398	1,166	6,293	21,441	3.41
1873	948	.....	296	1,244	9,894	18,100	1.83
1874	1,002	.....	302	1,304	10,927	12,648	1.16
1875	1,890	.....	568	2,458	8,788	7,368	.84
1876	2,631	.....	329	2,960	9,133	22,983	2.52
1877	3,298	.....	658	3,956	13,350	31,789	2.38
1878	2,660	.....	328	2,988	15,397	18,045	1.17
1879	2,669	.....	148	2,817	19,914	17,211	.86
1880	4,072	.....	144	4,216	26,286	24,601	.94
1881	3,694	.....	182	3,876	27,661	25,448	.92
1882	3,092	.....	179	3,271	30,350	23,631	.78
1883	2,655	84	279	3,018	23,450	25,790	1.10
1884	2,094	1	270	2,365	24,218	20,596	.85
1885	2,572	4	379	2,955	21,859	19,198	.88
1886	3,340	.....	966	4,308	28,065	19,996	.71
1887	1,637	.....	505	2,142	28,283	18,877	.67
1888	1,750	45	491	2,286	27,612	17,948	.65
1889	5,445	133	1,119	6,697	35,164	26,963	.77
1890	7,342	50	1,439	8,831	45,824	35,365	.77
1891	4,168	49	990	5,207	54,293	30,527	.56
1892	3,090	3	785	3,878	50,515	25,907	.51
1893	3,474	3	799	4,276	48,431	28,950	.60
1894	6,138	18	1,493	7,649	49,344	35,522	.72
1895	10,838	8	2,404	13,250	52,892	57,632	1.09
1896	11,219	14	2,784	14,017	60,960	58,519	.96
1897	7,571	7	2,237	9,815	60,476	40,874	.68
1898	7,058	16	1,823	8,897	55,364	44,193	.80
1899	11,630	22	2,701	14,353	57,071	64,604	1.13
1900	13,671	17	3,389	17,077	63,621	75,989	1.19
1901	11,811	10	3,276	15,097	69,389	66,417	.96
1902	13,019	15	3,440	16,474	88,767	71,179	.80
1903	15,177	322	3,670	19,169	100,461	94,694	.94
1904	16,008	449	4,088	20,545	117,081	101,175	.86
1905	12,601	382	3,583	16,566	134,717	84,157	.62
1906	14,550	493	3,787	18,830	126,494	92,445	.73
1907	15,534	555	3,579	19,668	166,095	120,107	.72
1908	13,215	631	3,108	16,954	178,527	129,079	.72
1909	13,906	1,127	3,483	18,516	183,171	128,329	.70
1910	11,025	1,540	2,466	15,031	209,557	127,900	.61
1911	9,828	1,612	2,397	13,837	220,449	134,045	.61
1912	12,518	1,828	2,864	17,210	222,935	164,213	.74
1913	19,099	2,530	3,995	25,624	248,466	237,121	.95
1914	16,669	2,351	4,159	23,179	265,763	214,125	.81
1915	9,155	2,043	2,987	14,185	281,104	179,463	.64
1916	18,844	1,837	4,047	24,728	300,767	330,900	1.10
1917	16,636	1,984	4,883	23,503	335,316	522,635	1.56
1918	17,860	2,324	5,629	25,813	355,928	703,944	1.98
1919	21,041	2,153	6,075	29,269	378,367	760,266	2.01
1920	24,278	2,275	7,466	34,019	442,929	1,360,745	3.07
1921	14,666	2,111	5,231	22,008	472,183	814,745	1.73
1922	17,332	2,023	5,459	24,814	557,531	895,111	1.61
1923	16,206	2,349	6,231	24,786	732,407	978,430	1.34
1924	14,771	2,173	4,950	21,894	713,940	1,022,683	1.43
1925	16,558	2,330	6,735	25,623	763,743	1,284,960	1.68
1926	19,013	2,341	7,965	29,319	770,874	1,447,760	1.88
1927	14,442	2,491	7,210	24,143	901,129	1,172,830	1.30
1928	12,526	2,727	7,078	23,331	901,474	1,054,880	1.17
1929	15,572	2,870	7,914	26,356	1,007,323	1,280,417	1.27
1930	11,640	2,866	6,734	21,240	898,011	1,070,200	1.19
1931	6,788	1,985	3,659	12,432	851,074	553,630	.65
1932	10,444	1,027	3,550	15,021	785,143	683,074	.87
1933	8,068	932	3,312	12,312	905,656	608,000	.67
1934	12,512	1,373	4,312	18,197	908,065	904,825	1.00
1935*	15,300	1,359	4,830	21,489	992,267	977,383	.99
Total	649,519	57,892	196,161	903,572	17,590,708	$21,398,807	$1.22

*1935 figures estimated.

Scientific Methods of Exploration for Oil Help Industry Meet Its Demands

The first oil was found. The billions of barrels since had to be sought.

If it had not been for the geophysicist and the geologist the world today would be suffering from a severe shortage of the things made from petroleum. Synthetic gasolines, costly and of inferior performance, would have been in use long ago. Every drop of good lubricant would be precious. And so on down the list of oil refinery products.

Until these two scientists appeared on the oil scene wells were located near asphalt seeps, oil springs and gas vents. Men played hunches. Wizards with forked sticks or other queer devices often were employed to determine the spot for drilling. One early operator used to tie a tin can to a dog's tail and then start the dog off on a run. Where the can came off the frightened dog's tail the operator would drill his well.

If science had not been utilized by the oil man, the fields located by the first crude methods would have been either exhausted by this time or producing in so limited a quantity that they could fill only a small fraction of the steadily growing demand for oil derivatives.

First the geologist with his planetable and other devices, and then the geophysicist with his torsion balance, seismograph, magnetometer and gravity pendulum, saved the day. Working from surface indications the geologist was able to find anticlines, with their promise of oil. But in some of the most prolific oil areas there were no surface conditions to afford a starting point for exploratory work. The Gulf Coast is such an area, and here geophysical prospecting has opened rich oil fields, including immense reserves which merely have been tapped.

Here, for example, are the Hastings field in Brazoria County, Texas, and the Anahuac field in Chambers County, Texas, each estimated to hold 200,000,000 bbls. of oil for future recovery. Each of these great pools was a geophysical discovery. The Iowa field in Calcasieu and Jeff Davis Parishes, Louisiana, opened through geophysics, is estimated to be good for 70,000,000 bbls. in addition to almost 14,000,000 bbls. already taken out.

Some idea of the immensity of geophysical work being done may be gained from the fact that in 1935, according to estimates, $16,317,500 will have been expended by oil companies of the United States in this type of exploration in all states regarded as offering oil prospects. This is more than $5,000,000 in excess of what was spent for similar work in 1934, and future years will see still further increases as the oil industry seeks to meet the insistent demands upon it. All this work will add to the billions of barrels of oil reserves already established by the use of geophysical instruments, opening fields and deeper zones which in all probability never would have been found but for the vision, aggressiveness and financial resources of skilfully managed oil companies.

Geology, which includes geophysics in the more restricted sense as applied to exploration for oil or gas bearing structures or testing the composition of rocks buried in the earth's crust, has contributed much to the discovery of new oil reserves. Since 1923 the oil industry has been using geophysics to an increasing degree and by the application of geophysical methods many pools have been discovered which might have been difficult to find if wildcatting alone had been relied upon. On the Gulf Coast of Mexico about 160 salt domes have been mapped by geophysics and a large percentage of them have proven productive when explored with the drill.

Of the several geophysical methods only the magnetic, gravimetric, electric, torsion balance, pendulum and seismograph are applied to oil prospecting. In actual operation all geophysical exploration consists of two distinct and equally important steps, the measurement of physical effects and the translation of such data into geologic terms.

The magnetic method, the oldest, is the most rapid and cheapest geophysical method of surveying. It is chiefly valuble for reconnaissance work and is now usually followed in areas where the prospects are indicated as favorable by other methods. This instrument depends upon the variations in the earth's magnetic field for its operation and records the magnetic anomalies produced by masses of rock of different density.

The pendulum and torsion balance instruments depend upon gravity variations. The older pendulum method depends upon determination of the period of oscillation of a pendulum, while the newer torsion balance method determines the direction and magnitude of the gravity gradient or a horizontal rate of change of a function of gravity and differential curvature.

The seismograph long has been used to record earthquake shocks and as used in the oil fields the same general principle applies, for miniature earthquakes are caused by geophysical crews, who explode dynamite in shallow holes and then observe the time interval between explosion and return of the elastic wave to the geophones located in fan-shaped position around the recording instrument.

There are two types of seismographic surveys, the refraction and reflection. By the refraction method a profile is obtained from a single shot point and the data obtained permit the construction of a time-distance curve. The reflection method consists in shooting and recording on a detector a relatively short distance away reflected elastic waves that have passed through the various intermediate strata until reflected to the surface by striking some harder or marker bed, thereby giving data upon the relative elevations of horizons usually from 4,000 to 5,000 feet beneath the surface.

Because of the increasing demand for crude oil and its products it has been necessary for the industry to adopt geophysical methods of exploration and in some measure to discard the older methods of geological investigation as too slow and costly.

When new pools were plentiful and their supply ample for the immediate demands wildcatting was increased or retarded by price fluctuations. If a shortage of oil seemed imminent the price for crude would be increased and this would induce the drilling of more wells and after sufficient new reserves had been created by discovery of new fields and the supply of oil had been replenished by running it to storage the prices would be cut and drilling retarded.

Operators 20 years ago were guided largely by so-called "trends" and they still often played "hunches" in the drilling of wildcat wells, in neither case getting the advice of geologists before making their purchases of acreage or in locating wells after the land had been acquired.

As far back as 1885 Dr. I. C. White, who had been connected with the Second Geological Survey of Pennsylvania since 1875 as a geologist, published his conception of the "anticlinal theory" of gas and oil accumulation. The idea was not entirely new, but Doctor White is credited with presenting the principal facts relating to this theory in such a manner as to make them available to the petroleum industry to serve as a guide in the search for new oil fields.

There were relatively few who were willing to accept these scientific rules and while a few geologists were

Radio sender station with shooting machine and apparatus to determine the meteorological data on the shot point in geophysical exploration work

The Oil Industry's Record

employed from time to time in assisting in working areas under consideration for leasing and drilling, it was not until about 1914 any appreciable number of geologists were employed by the oil companies.

In that period consulting geologists were in active demand because oil operators at last had realized the value of structure mapping and for the first time the term "structure" played an important part in the discussion of oil territory. This change in attiude on the part of the operators was brought about through successes scored by geologists in mapping surface structures which when drilled were proven to reflect the presence of underground structures in which gas and oil had accumulated in commercial quantities.

One of the major discoveries of 1914 was made by the Empire Gas & Fuel Co. when the Augusta, Kans., oil field was opened following planetable work done in 1913 by geologists. In 1915 the big field near Eldorado, Kans., was opened by the same company following additional geological field work and these two successive strikes of important oil fields influenced largely by geological work resulted in the Empire Gas & Fuel Co. creating the largest geological department ever maintained by any one company in the industry.

At the height of this department's career about 250 men and women were employed and over 100 geologists were scattered throughout the Mid-Continent region searching for surface evidence of underground structures. The Empire company acquired an enormous amount of acreage in the Mid-Continent region, particularly in Kansas and Oklahoma, but much of it when drilled proved dry. The large geological department then was reduced and it was realized detailed and careful field work was more important than mass production of field maps by inexperienced men, many of whom had been taken from the college class rooms before completing their regular courses of study.

Much good eventually came out of this organization for many of the leading geologists entered the petroleum industry through connection with the staff of the Empire Gas & Fuel Co. Another important contribution made by this group was the establishment of a separate department for subsurface work with microscopic study of drill cuttings and research pertaining to oil and gas accumulation. This new feature has since been developed into the paleontological branch of the industry and it now performs an important part in locating and drilling for oil and gas.

To get some idea of the changes that have taken place in the geological departments of the oil industry since 1915 it is necessary to outline the usual procedure followed in the old days and compare it with modern practices.

A group of men having decided they desired to acquire acreage and drill a well in what they considered a favorable locality would hire a consulting geologist to pass upon the area. This geologist, who maintained offices in one of the larger cities in the oil region, would proceed by train and horse-drawn vehicle to the location to be examined. This transportation service was slow and much time was consumed in going to and from the field.

If reconnaissance work only was desired, the geologist would make the trip unaccompanied. He would walk over the area and make his report upon it as to whether it was in general favorable or unfavorable. For such services a fee was charged based upon a monthly income of $300 and up. Transportation charges also were included and expenses while away from the office. While the daily charges were relatively low the time required to make such trips was long and the minimum costs would average about $550 a month.

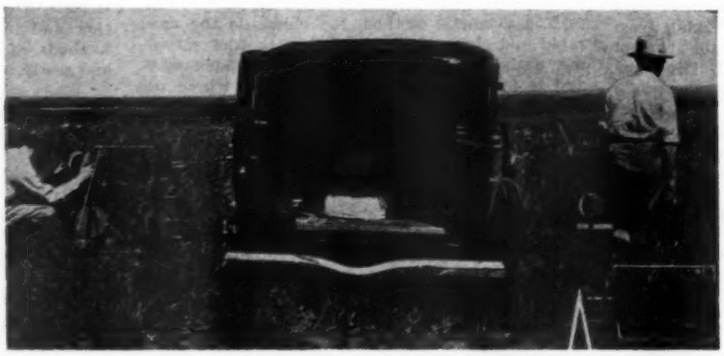
For detailed work the geologist would be accompanied by an instrument man paid on the basis of $200 a month salary and probably one rodman or general assistant drawing a salary of $100 a month. For these men it would be necessary to provide a camping outfit and horses and buggies, and to feed men and animals would add about $10 to costs. Under these circumstances the monthly costs for detailed field work would average about $1,000.

As the value of geological work became recognized the established oil companies employed geologists and assistants for their work and along

Firing shot for seismograph recording

with this development land departments were also brought into being and these worked closely with the geological departments. After the geological department had made a favorable report upon an area it was the duty of the land men to acquire legal title and "block up" the acreage surrounding the structure mapped by the geological department.

Another department developed during this period directed diamond drilling in areas where key beds were covered by debris. If the formations of importance to the geologist in his field work were not exposed diamond-drilled holes were sunk through the surface material and into the "key beds," where cores were taken. The cores then were examined by the geologist and later correlated, and the attitude of the buried formations was developed. In this way structure could be mapped even though it was not visible.



Recording truck and seismograph party on location

It is difficult to present hard and fast statistics covering the number of geologists employed or qualified to be employed in the petroleum industry at any time. In January, 1916, the American Association of Petroleum Geologists was formed in Norman, Okla., and one year later, at the first annual meeting, there were 94 members of record. This figure probably represented a large percentage of all geologists engaged by the oil industry.

The membership of the A.A.P.G. grew steadily after 1917, and in 1931 its membership was 2,562 with probably less than 1,000 others working at this profession either full or part time who did not belong to the association. Following 1931 there was a decided curtailment of staff in the oil companies, but men were again engaged in 1933 in increasing numbers and the membership of the A.A.P.G. at the present time is approximately 2,137, with more than 600 other geologists formerly engaged in the oil industry known to be eligible for membership, making the total number of geologists about 2,750. Adding to this number recent graduates from universities and colleges qualified to do petroleum geological work, there are probably about 4,000 men and women now engaged in some phase of geological work for the oil companies in this country.

In each of the 18 oil-producing states there is a large percentage of the land under lease for oil exploration. In Kansas out of about 52,000,000 acres about 8,000,000 acres or 15.2 per cent is now under lease. This percentage is probably higher than in many of the other oil-producing states, but when the size of Texas and Oklahoma is considered and the proportion of the areas considered as favorable for the finding of gas and oil it is evident oil and gas leases yield a substantial revenue to land owners in those states.

The farmers and cattle growers and other land owners are conscious of the magnitude of this source of income which is paid in the form of bonus and as yearly rental and are anxious to have it continued.

Between 1859 and 1936 there have been discovered and developed in this country approximately 2,500 oil fields. This number of pools having been discovered reduces the chance of finding new deposits. The first fields were of the type easily found and those remaining to be discovered are increasingly more difficult to find.

This condition has created a demand for geophysical exploration seeking deeply buried structures not reflected in the surface formations. This type of work is highly specialized and each year scores of field crews work likely areas, using one or more of the accepted geophysical methods.

As compared with the cost of mapping a surface structure in detail, which has been placed at about $1,000 a month, modern geophysical crews cost about $9,000 a month for 12 men with modern automobiles and trucks, precision instruments and high-powered explosives. These men travel to and from their work each day and are no longer quartered in field camps but live in modern hotels and travel over paved roads. Many of these improvements are directly traceable to the development of the oil business and its sister industry, the automotive industry. But with all the improvements the cost of finding likely underground structures is higher today than 20 years ago when the undiscovered oil fields were more numerous and surface evidence of their presence more pronounced.

The volume of geophysical exploration being done is indicated by the following table covering 1934 and 1935.

Type instrument—	Cost per crew per month	Crew months 1934	Expenditure 1934	Crew months 1935	Expenditure 1935
Magnetometer	$500.00	120	$60,000.00	161	$80,500.00
Torsion balance	1,300.00	540	702,000.00	390	507,000.00
Pendulum	5,000.00	84	420,000.00	48	240,000.00
Gravity meter	2,000.00	36	72,000.00	50	100,000.00
Seismograph	9,000.00	1,110	9,990,000.00	1,710	15,390,000.00
			$11,244,000.00		$16,317,500.00

This may seem a large sum of money to spend for this type of work, especially in view of the fact new fields are still difficult to find. This type of exploration has resulted in a great saving to the industry because it has eliminated the necessity of drilling a large number of tests at costs far in excess of the cost for geophysical exploration by any method. The industry has learned it is simpler, cheaper and quicker to test an area by geophysics than to attempt wildcatting to determine the presence of structure and gas and oil fields. It therefore has adopted geophysical methods, supplemented by test wells in favorable areas.

ANY man who's ever handled a torch will tell you that the quickest, strongest welds are the ones that join two pieces of *identical* pipe—or a pipe and a Tube-Turn.

Why the latter? Because the Tube-Turn is in no way different from the pipe except that it isn't straight. (1) It is made of the same material. (2) It has the same wall-thickness as the pipe—matches the pipe in both I. D. and O. D.

If you think these are small points, just run time and strength comparisons on other kinds of weld! Tube-Turns, Incorporated, Louisville, Ky.

TUBE-TURNS* PERMIT BETTER WELDING

★ The word "Tube-Turn" is NOT a general name for welding fittings. It is the copyrighted name of the seamless fittings having uniform wall-thickness at all points, true circular cross-section, uniform radius of curvature and smooth inner walls. Made ONLY by Tube-Turns, Incorporated.

The Oil Industry's Record

Drilling Below 3,000 Feet Has Added Billions of Barrels to Oil Reserves

Deeper drilling by the petroleum industry, made possible during the past 20 years by improvements in equipment and machinery and by scientific and engineering principles employed in drilling practices, already has made available for use of the people of the United States more than 6,000,000,000 bbls. of crude oil from depths below 3,000 feet. The average depth of oil-field drilling operations 20 years ago was about 3,000 feet. Now, with the improvements mentioned, the drill is carried to four times that depth. Within the past year a well has gone to a depth of 12,786 feet and equipment now in use is said to be capable of carrying the hole to 15,000 feet.

All important discoveries of crude oil reserves in recent years have been in pools more than 3,500 feet below the surface. East Texas has an average depth of 3,650 feet; Oklahoma City, 6,300 feet; Seminole, 4,300 feet; Rodessa, 6,000 feet; Fitts, 4,200 feet; and so down the line through Kettleman Hills, Conroe, the Louisiana Gulf, the new discoveries in western Kansas and the activity in Lea County, New Mexico.

Depths which until comparatively recent years were considered the ultimate in drilling do not even stir comment now, and it is common practice in various areas to carry wells down to 9,000 feet in the search for crude oil.

Importance to Nation

The vital importance to the nation, the 26,000,000 motorists and to all industry depending on petroleum lubricants for high-speed machinery, of the advance in drilling technique and materials which permitted the drilling to these great depths, may be visualized when it is considered about one-half of the proven recoverable crude oil reserves of the country have been found at depths below the average depth of drilling operations in 1915.

Back of this is the big story of how this accomplishment was made possible—a story of research and the expenditure of millions of dollars about which the public has never been told. Oil companies have employed in large numbers engineers, chemists, metallurgists, geologists, geophysicists and other technical men and have maintained research departments with an outlay of large sums of money each year in order to provide adequate crude oil reserves for the people and business of this country. Manufacturers of oil-field equipment, realizing the needs of the petroleum industry and the necessity of this deeper drilling, also enlarged their research departments and had their scientists work on problems involved in deeper drilling.

Experiments and research in metallurgy have made possible the manufacture of better steels for casing, drillpipe, derricks, machinery, tools and other equipment which are an essential part of the great mass of supplies essential to deep drilling. The chemist has played a most important part in the advancement in drilling methods and practices and in solving problems relating to mud fluids and other conditions encountered when drilling more than a mile beneath the surface in high-pressure formations and cavey strata.

The total production of crude oil in the United States in 1915 was 281,104,000 bbls., nearly all produced from sands varying in depth from "grass roots," or very shallow sands, down to 2,800 feet.

In 1935 the production of the United States will be about 902,267,000 bbls., much of which comes from sands below 3,000 feet, some below 9,000 feet.

Twenty years ago oil had not been discovered in Michigan, Montana, New Mexico or Arkansas, which states now are producing 150,000 bbls. a day, with a potential production far in excess of that figure. Texas produced 24,943,000 bbls. of oil in 1915 and in 1935 will produce around 389,856,000 bbls., or nearly 109,000,000 bbls. more than the United States produced in 1915. California, which produced 86,592,000 bbls. in 1915, will produce around 207,886,000 bbls. this year; while Oklahoma, which produced 97,915,000 bbls., will produce 187,577,000 bbls. this year. Kansas, which produced 2,823,000 bbls. in 1915, will produce this year 54,728,000 bbls., breaking all its records.

At the close of this year the United States will have produced a total (estimated) of 17,590,708,000 bbls. of oil. But what the oil industry, the public and the government are more interested in now is how much is left in reserves in the ground.

Known Reserves

The American Petroleum Institute will soon issue a book surveying the oil industry. In it the Institute makes the following estimate of what is left to draw upon from known oil fields:

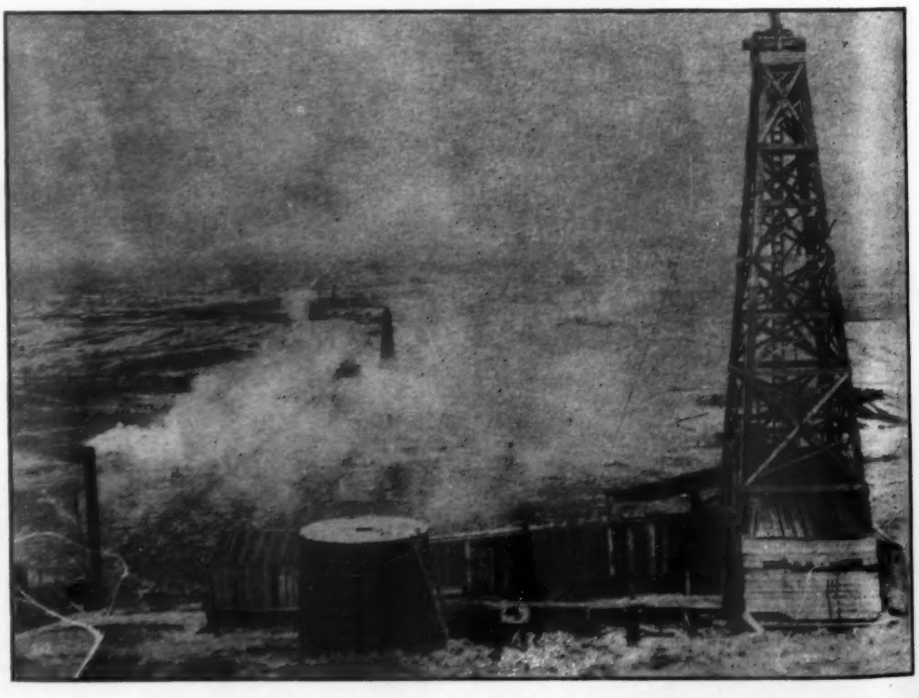
	Bbls.
California	3,500,000,000
Wyoming	250,000,000
Montana	60,000,000
Colorado	12,000,000
New Mexico	350,000,000
Texas	5,500,000,000
Oklahoma	1,200,000,000
Kansas	400,000,000
Arkansas	75,000,000
North Louisiana	55,000,000
Coastal Louisiana	320,000,000
Illinois	35,000,000
Indiana	5,000,000
Kentucky	35,000,000
Michigan	45,000,000
New York	40,000,000
Ohio	30,000,000
Pennsylvania	240,000,000
West Virginia	25,000,000
Total United States	12,177,000,000

Estimated reserves are what the fields already producing are expected to yield. They do not include any guess as to what is under the ground in unexplored areas. Based on the total of reserves as shown in the foregoing table, the uninitiated might think that there is only enough oil left in the country to supply the demand 10 or 12 years. The fact is that in the coming 10 years, based on the record of the past 10 years, about 207,000 wells will be drilled, of which about 127,500 will be oil wells, many of them drilled in pools now undreamed of. In Oklahoma this year a reserve of over 270,000,000 bbls. of oil was uncovered, and in Kansas new pools opened this year are estimated to be good for 100,000,000 bbls. of oil without counting the dolomite discovery in the Oxford pool. These are examples of what one year may bring.

In the table of reserves it is estimated that 90 per cent of the future oil recovered will come from 175 known oil-producing districts. Such fields as East Texas; the Los Angeles Basin pools in California; Oklahoma City, Fitts, Jesse and Fox deep-sand pools and the Greater Seminole area in Oklahoma; Conroe, Anahuac, Thompson and Hastings in Coastal Texas; the Yates and Van pools in Texas; Iowa and Lake Barre in Coastal Louisiana; Rodessa in North Louisiana, and the western Kansas pools and the Lea County, New Mexico, pools will account for much of the known reserve. The Bradford field in Pennsylvania will produce the bulk of the reserve credited to that state, and an area that has adopted the Bradford system of water-flooding, namely northeastern Oklahoma, is credited with a recoverable 45,000,000-bbl. reserve.

Below 3,200 Feet in Kansas

In 1915 the average oil well in Kansas was less than 1,000 feet in depth. The first deep-sand discovery in that state in 1916, in Butler County, Kansas, was made around 2,450 feet. Now most of the drilling in Kansas is below 3,200 feet and



Cable-tool drilling rig and tankage of the type in use in 1915

most of the oil production is from formations that run from 1,500 to 2,500 feet deeper than the deepest wells in the state in 1915.

In Oklahoma, Cushing was the deepest field in the state in 1915. The big pay was in the 2,800-foot horizon. The same sand, the Wilcox, in the Seminole field, was found at about 4,300 feet and later in the Oklahoma City field at around 6,300 feet.

In the 20 years since Cushing was at its height as a producing field hundreds of pools have been discovered in Oklahoma. In about 60 of these the average depth of the top of the deepest producing pay was 4,475 feet, ranging all the way from 3,000 to 9,920 feet, and the average cost of the wells drilled in the state has increased from $8,321 to $30,000, with a maximum of $200,000.

In the Gulf Coastal division of Texas, in recent years, more than 80 pools have produced oil at depths below 3,000 feet and the average depth of the deepest producing zones in these pools is close to 5,000 feet, ranging from 3,000 down to 9,125 feet. Some of these are old pools which in recent years were drilled to deep pays. In West Texas all of the pools have come in since 1925 and 18 of these produce from pays below 3,000 feet, the average depth being 4,270 feet, with the Ordovician sand producers below 8,000 feet. The Panhandle has five fields in which the deep pays lie below 3,000 feet with an average of 3,050 feet, and Central Texas can boast of more than a dozen pools producing from below 3,000 feet and all of them discovered since 1915. Twelve of these pools average 3,564 feet to the bottom of the holes. The North Texas area is largely made up of shallow pools, but two are recorded with an average bottom-hole depth of 3,650 feet. The East Central Texas areas generally produce from sands above 3,000 feet, but four pools are recorded with an average depth of 4,065 feet. The East Texas pay sand is topped below 3,600 feet. Southwest Texas has a half-dozen pools with oil production below 3,000 feet, averaging 3,416 feet down to the pay.

Deep Wells in Gulf Coast

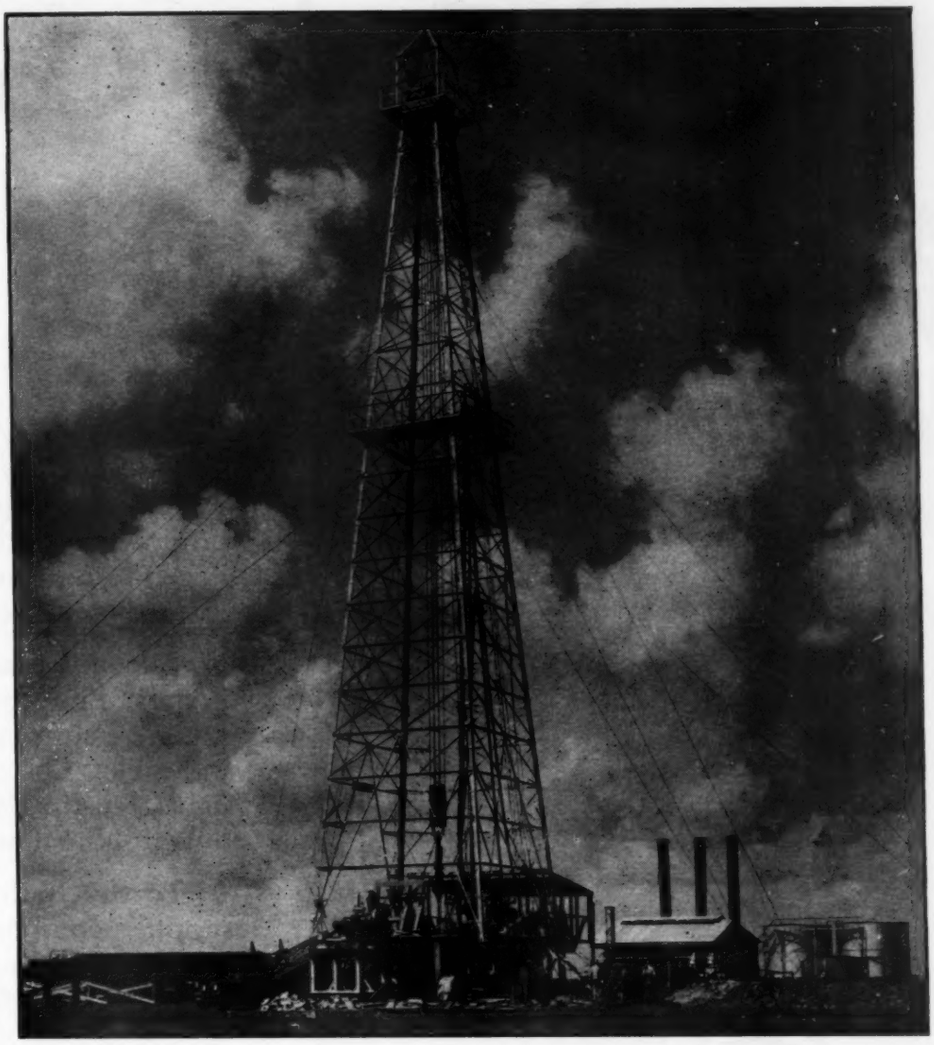
There are seven producing wells in the Louisiana Gulf Coastal fields between 8,000 and 8,500 feet in depth; 51 producing wells between 8,500 and 9,000 feet; and six producing wells below 9,000 feet. In five pools, Bosco, Lafitte, Roanoke, Tepetate and White Castle are producing oil from depths of 8,000 to below 9,000 feet. In the north end of the state, the Rodessa field, opened this year, produces from below 6,000 feet. In North Louisiana deep sands have been developed in Rodessa, Sarepta and Cartersville. Twenty-three pools have been developed in the north end of the state since 1915, of which 15 are still listed as producing.

Over half the fields in California have been opened in the last 20 years. There are 44 fields, and in some of these are a number of separate pools. Thirty-one pools in the state in which deep drilling has been carried on have an average depth to the top of the deepest oil sand of 4,960 feet, ranging from 3,000 to 6,470 feet to the top of the pay, with the total depth far below the last named figure.

Of the 15 pools discovered in Colorado since 1861, when the Florence pool was opened, all but two have been found in the past 20 years and of these, six pools show an average depth to the top of the deepest productive sand of 4,760 feet. Wyoming, in which most of the pools now productive were opened in the past 20 years, shows some deep oil and gas sands with an average of 3,900 feet to the top of the pay and a range of depth reaching as low as 8,250 feet. New Mexico, where important pools have been developed in the past 20 years, has six deep-sand pools where the average bottom-hole depth has been 3,683 feet. Its oldest pool is only 12 years of age.

The oldest Michigan field is only 11 years of age. It started out with a shallow field, but when the midland counties were explored and brought into the production column, operators began going deep for oil and gas and six pools show an average deepest-pay depth of 3,500 feet.

In the old eastern fields the only deep-sand pay discovered has been a gas sand. Oriskany sand in Potter and Tioga Counties, Pennsylvania, lies below 6,300 feet and was found highly productive. Drilling for Oriskany sand oil or gas is now being pursued in western Pennsylvania and in West Virginia.



Rotary drilling rig of the latest type. Note steel substructure and double drawworks

Between the drilling to 3,000 or 3,500 feet 20 years ago and the present capacity of equipment to drill 12,786 feet, the depth recently attained by a well in Upton County, Texas, lies a story of revolutionary changes in drilling equipment, of engineering and geological achievement, of vastly widened knowledge of underground conditions, all of which are the result of the untiring research into which every manufacturer of oil-field equipment has entered in an effort to find a product that would answer the demand of drilling and production engineers and geologists for materials that would permit exploration of greater depths in the effort to uncover and make available larger and more productive reserves of crude oil. This research has been conducted in metallurgy, chemistry, electricity and mechanics, making possible the production of better steels for casing, drill pipe, machinery, tools and equipment necessary for the drilling and producing of deep wells.

The chemist has played his part in the advance of drilling practices through the selection of proper materials for the conditioning and weighting of drilling muds. His services are also indispensable in almost every industry supplying equipment for the drilling department. All the various fields of research involved in the drilling of oil wells have contributed generously toward supplying materials that have made it possible now to drill to depths of 15,000 feet.

With the present rotary outfits the surface string of casing is much longer than the old wooden conductor used in the early-day cable-tool drilling. After the surface casing has been run it is cemented in place to form the base for other strings of casing as they are run and set, each being cemented in turn.

In rotary drilling the mud has a tendency to wall the face of the hole and seal off small gas and water formations penetrated, materially reducing the number of casing strings needed. This has necessitated a marked improvement in the quality of the casing, and strings of pipe suitable for wells drilled to 15,000 feet are now obtainable. In the old cable-tool days casing good for about 5,000 feet of depth with a factor of safety of two was about all that was available. This would have limited rotary practice had the rotary equipment of those days been heavy enough to drill below 5,000 feet.

To handle mud fluid for circulating the cuttings out of the hole as the various formations are penetrated by the bit the rotary rigs are equipped with heavy-duty slush-pumps capable of building up pressures in excess of 3,000 pounds per square inch, and if these are used in series pressures of 5,000 pounds may be created.

Cone and roller type bits are now made in all sizes and for all types of drilling duties. In addition to the regular type bits, core bits and barrels are a part of every rotary rig and the core barrels are frequently used, even in holes drilled in productive territory because of the great value of the knowledge gained for the future concerning the producing formation.

Leading Oil Companies

GUSTIN-

There are several things of which Gustin-Bacon is justly proud . . . the quality of its manufactured products . . . the relationship it enjoys with other manufacturers it is privileged to represent . . . the sincere purpose and loyalty of its representatives and employees.

But above all other things, Gustin-Bacon is rightfully proud of the character of its customers—customers who embrace two giant industries, Oil and Railroads. And in these fields, Gustin-Bacon patrons are leaders, not only in the United States but in the world.

To the Railroads, Gustin-Bacon has long supplied equipment too varied to enumerate in one advertisement.

To the Oil Industry, Gustin-Bacon supplies both *service* and products—for Gustin-Bacon branches and service depots *blanket* the Mid-Continent and Gulf Coast fields.

and Railroads Rely on -BACON

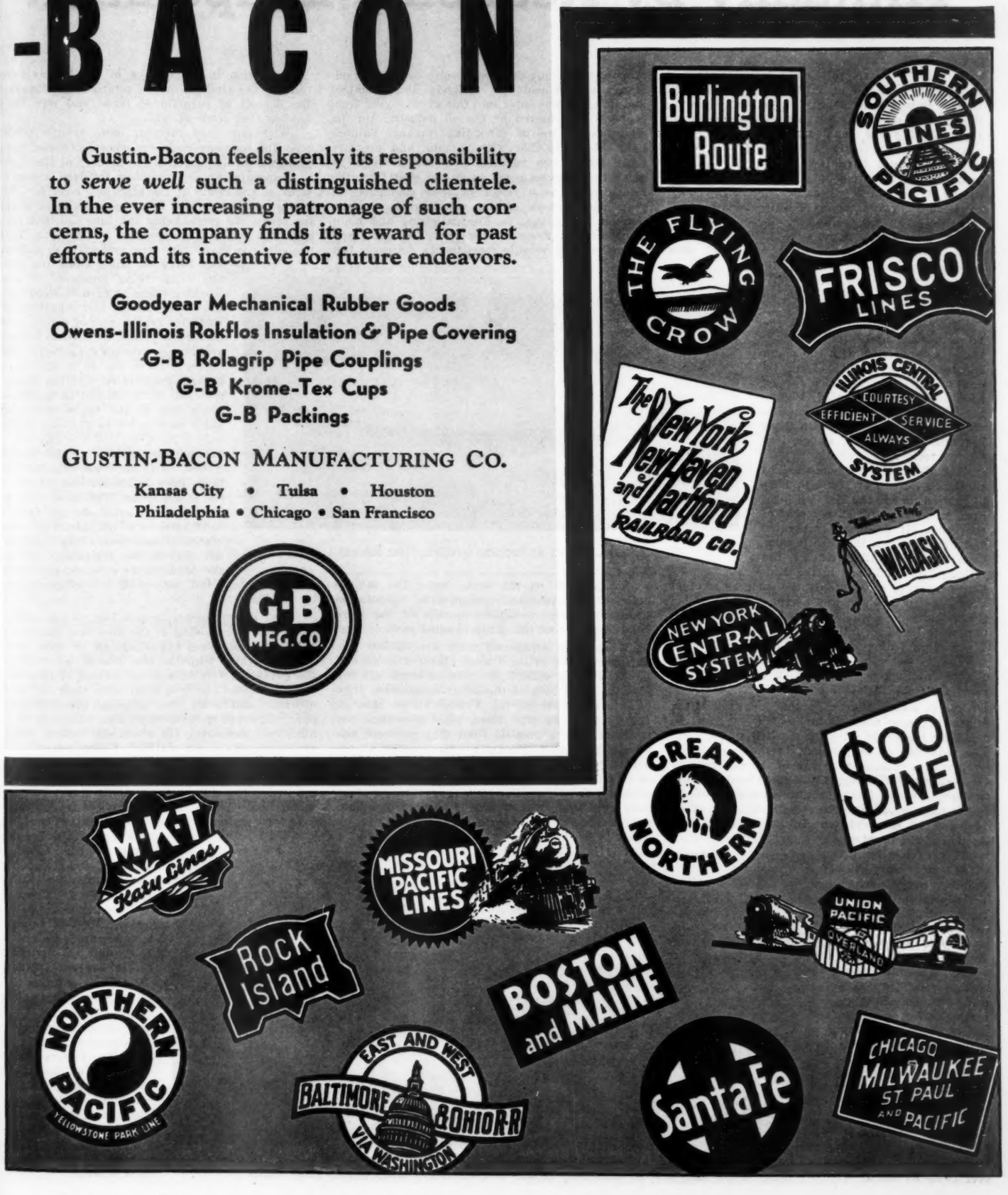
Gustin-Bacon feels keenly its responsibility to *serve well* such a distinguished clientele. In the ever increasing patronage of such concerns, the company finds its reward for past efforts and its incentive for future endeavors.

Goodyear Mechanical Rubber Goods
Owens-Illinois Rokflos Insulation & Pipe Covering
G-B Rolagrip Pipe Couplings
G-B Krome-Tex Cups
G-B Packings

GUSTIN-BACON MANUFACTURING CO.

Kansas City • Tulsa • Houston
Philadelphia • Chicago • San Francisco

G-B MFG. CO.



The Oil Industry's Record

Over 41 Million Barrels of Oil Saved Annually by Reducing Evaporation

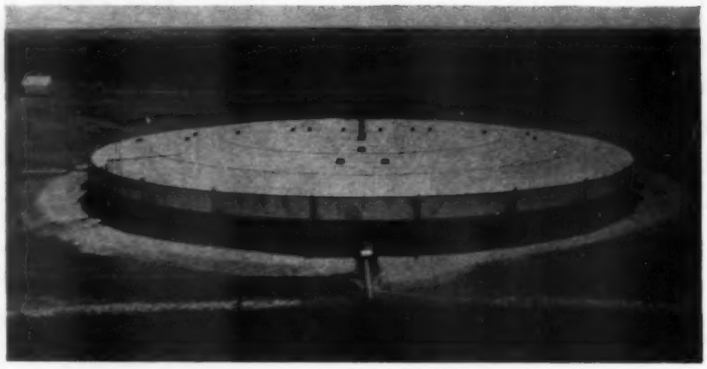
Improvements in methods and equipment for handling crude oil from the well to the refinery, developed by the petroleum industry and oil equipment manufacturers during the past 15 years, enabled the oil industry this year to save 41,675,214 bbls. of crude oil which otherwise would have been lost as a result of evaporation. In terms of gasoline this meant a saving of 770,057,948 gallons of motor fuel, enough to provide a year's supply of 690 gallons per car, for 1,116,026 passenger automobiles.

In other words, there were 1,116,026 automobiles in the United States this year which were operated on gasoline saved by the oil industry through greater efficiency in handling the crude oil. This saving is in addition to 22,504,615 bbls. of lubricating oils, fuel oil, kerosene and other products made in connection with the manufacture of the gasoline from the quantity of crude oil which formerly would have evaporated. Figures are based on an average gasoline recovery of 44 per cent with 2 per cent allowed for coke, sludge, loss, etc., in refinery operations.

Actual field tests conducted by the U. S. Bureau of Mines in 1920-21 showed that in the Mid-Continent area an average of 6.2 per cent of the crude oil produced evaporated and was lost from the time it came from the well until it reached the refinery. As conditions in the Mid-Continent were substantially the same as in other areas, this percentage was accepted as typical of the industry as a whole. These losses by evaporation were listed as follows: From the flow tank, 1 per cent; filling lease tank, 1 per cent; lease storage, 1.5 per cent; pipe line gathering systems, 1 per cent; main transportation systems, 1 per cent; and tank farms, .7 per cent.

Recent tests conducted by the Bureau of Mines show that new methods and equipment used in handling the crude oil have resulted in an average reduction of 68 per cent in the losses from evaporation, making a saving of 4.2 per cent in the quantity of crude oil handled and making available for use in the manufacture of gasoline, lubricating oils, kerosene, fuel oil and other products, 4.2 per cent more of the crude oil production of the country.

This saving by the petroleum industry is all the more impressive, especially in the Mid-Continent area, because the average volatility of the crude handled has increased during recent years. A small difference in volatility makes a big difference in evaporation. For instance, government tests show that evaporation losses for one year from vapor-tight tanks containing 34 to 36 gravity A. P.I. crude oil were about 1 per cent whereas similar tanks containing 38 to 40 gravity crude lost more than 2 per cent, or over twice as much, by evaporation during the same twelve months period. Many improvements in methods and practices and in equipment enter into this great saving from evaporation achieved by the oil industry. On the oil lease, the use of vapor-tight tankage painted light colors together with vacuum and pressure relief valves has reduced evaporation losses in many instances as much as 80 per cent from the figure given as a result of tests conducted 14 years ago. Because of this reduction in evaporation on the lease, pipe line gathering and main transportation systems now carry oil that contains the more volatile constituents, formerly lost by evaporation on the lease, hence the savings effected by pipe line companies in evaporation losses are more creditable because of the more volatile nature of the crude handled now.



Steel balloon to reduce evaporation losses

When it is considered there are 335,000 producing oil wells in the United States with an output in 1935 of 992,267,000 bbls. of crude oil and that the great bulk of this oil is transported from and to all parts of the United States through 112,000 miles of pipe lines, holding evaporation losses of such a volatile fluid to 2 per cent has been a great accomplishment. Evaporation is enhanced when the crude is exposed to air so with so much handling of this large volume of fluid savings have been effected largely through practices and equipment which reduce or eliminate the passage of air across the crude.

Pipe line station handling 28,000 barrels daily without working tanks

Reduction in evaporation of the lighter fractions of the crude naturally retarded and lessened the deposit of paraffin in tanks and pipe lines holding that grade of oil.

With pipe lines carrying more volatile crude, pipe line company engineers were confronted with problems involving a greater tendency of the crude to evaporate. Former practices involved measurement of the crude at the pipe line receiving station where there would be two or more large working tanks, the crude being run into one tank and measured and then pumped out into the line. This procedure in many pipe line systems was carried out every 40 miles along the line, the crude being measured in the working tanks at each station. Naturally the filling and emptying of the large tanks, most of which were 55,000-bbl. tanks, resulted in considerable loss through evaporation, air currents above the oil in the tanks becoming saturated with the lighter fractions of the oil and these vapors being lost as the tanks would be filled or emptied as the case might be.

Pipe line systems of the United States, carrying crude oil, have in these lines 23,500,000 bbls. of crude oil at all times. The pipe lines in reality are a great storage system in themselves so the matter of evaporation losses was a big problem, not only to the companies, but to the industry as a whole interested in conservation and preventing loss of the valuable product.

First improvements in pipe line transportation came with the welding of the lines and the use of a much better steel manufactured by steel companies working with the pipe line industry. With the advent of welding and the making of pipe line systems almost one long solid tube, more efficient operation and better river crossings, pipe line company engineers devised ways and means of handling and measuring the crude oil without using working tanks at all stations. Under latest practices the crude is checked at the first station on the line and from then on is kept inside the line and not pumped into tanks until it reaches its destination. Where tanks are necessary, devices have been perfected to reduce evaporation, such as floating roofs, where the top of the tank rests on the fluid and eliminates the air space above the oil.

Evaporation losses on leases and field storage have been reduced greatly through better tanks, pressure valves installed on tankage, painting the tanks light colors which reflect the sun's heat and devices perfected and installed which collect the vapors from above the oil in tanks. One of these devices is called the steel balloon. These steel balloons are used like breather bags and gasometers and reduce the breathing losses of storage.

Purchases Made by Oil Industry Affect Country's Entire Economic Structure

Total expenditure by oil companies in 1936 will approximate $4,000,000,000. Of the total amount the refining branch stands ready to spend in excess of $1,650,000,000, one-half of which will go into new equipment, repairs and replacements, taxes and labor. The amount spent for labor alone will exceed $130,000,000. Ad valorem taxes paid on refinery property will provide $90,000,000 to the municipalities in more than half of the states in the country and to this must be added the direct manufacturers tax which will net the federal government approximately $192,000,000.

The year of 1936 should exceed any since 1929 in construction and replacement for the refining industry. For the past few years refiners have been forced to be content with patching, and then repatching, their equipment, operating stills and accessories which were inefficient and obsolete. But now after a year in which market prices have been improved and the prospects for 1936 pointing to still higher prices for their products refiners will once again be in a position to improve the operating conditions in their plants.

The $180,000,000 refiners will spend in 1936 for equipment will be consumed through the purchase of approximately $69,000,000 worth of heavy fabricated material and machinery for use in new plants or for the expansion of existing units, $46,000,000 for the repair and maintenance of present plants, $18,800,000 for cans and containers, $24,000,000 for refinery owned marine facilities, $3,000,000 for tank cars and parts, $2,000,000 for cement and approximately $18,000,000 for miscellaneous items that will come to the plant in the form of barrels, paint, insulating materials, etc.

Expansion of Polymerization

An important factor in the purchase of new equipment next year will be the expansion of polymerization. In the past year the processes for manufacturing motor fuels of higher octane-blending values were developed to the point of large-scale commercial production and as a result many refiners are planning construction of polymerization units. Solvent refining equipment will also continue to share a portion of the sums spent for heavy equipment, but not to the extent enjoyed by cracking and polymerization.

Expenditures by the pipe line division of the petroleum industry for new lines and replacing and reconditioning present lines during 1936 are expected to exceed those of the past year. The developing of new fields and the extension of lines in old fields necessitates this increase.

Reconditioning work on pipe lines and replacements are estimated to cost $117,500,000 during 1936, this figure pertaining to only the abovementioned work and does not include the estimates of costs for entirely new lines which may be built as new fields develop.

Many other industries will benefit from this expenditure which will involve pipe, laying equipment and other materials in addition to trucking and railroad transportation of materials. Welding firms, coating manufacturers, ditching contractors, and pipe manufacturers will benefit from this pipe line work.

The production branch of the oil industry will expend $483,000,000 in 1936 for drilling wells. This figures does not include the amount paid as salaries, operating expenses, or overhead of the companies doing the work. It represents only the cost of labor, equipment and machinery used in the work.

With producing companies becoming more concerned over their future reserves of crude oil and the fact that the industry has been steadily withdrawing crude from storage, the drilling companies are expected to show a great increase in drilling activities during 1936.

Farm Owners Beneficiaries

Another expenditure of the oil industry which aids a large number of people in scattered areas is the vast amount of money annually paid to the farmer or rural land owner for rentals, bonuses and royalties. Approximately $212,000,000 is paid every year for these purposes. The extent to which the farmer participates in these rentals and bonuses from the petroleum industry serves to benefit other industries and the nation as a whole since it furnishes increased buying power.

Annual Expenditures By the Petroleum Industry

Oil business employes	$2,050,000,000
Government as taxes	1,100,000,000
Railroads as freight	236,000,000
Farmers as rentals, etc.	212,000,000
Chemical industry	100,000,000
Cement, paint and lumber	10,000,000
Steel and iron industry	400,000,000
Engineering contractors	600,000,000
Electric power companies	40,000,000
Container manufacturers	20,000,000
Real estate owners as rent	16,000,000

The importance of the oil industry in the national economic scheme as a means of contributing wealth to the nation and supplying a market for other manufacturers of basic commodities cannot be overemphasized. The desire to improve the quality of its products, to improve production methods with a resulting increase in ultimate recovery and to give the public a better product at a cheaper price has resulted in the industry spending huge sums of money annually, all of which goes to furthering the progress of the nation.

It is estimated there are about 1,250,000 employes on payrolls of the oil business with wages totaling $2,050,000,000 annually. Purchases from other industries during 1936 are expected to exceed $1,375,000,000. With these two facts in view and the knowledge that annual taxes contributed to government approximate $1,100,000,000 the importance of the petroleum industry as a means of distributing wealth may easily be seen. This great buying power made possible through the exploration for oil and gas and the consequent manufacture and distribution adds strength to our economic structure. Another factor of striking importance is the fact that this buying power witnessed no great curtailment during the past four or five critical years.

Governmental statistics serve to reveal the immense proportions of the petroleum industry and the huge size of its contribution to the development of the country. One-fifth of all the manufactured products of the United States owe their origin to the oil industry. So, without this industry there would have been no market for this amount. No other line of basic activity, except agriculture, plays so large a part in modern American business. No other mineral extracted from the earth adds so much to natural wealth when its value is figured in the form consumed by the public.

The oil and gas industry during normal times consumes from 8 to 10 per cent of the total output of the steel industry. The automotive industry, whose development was made possible by the oil industry, annually utilizes one-fifth of the nation's steel output. Thus the oil industry has made possible a market for approximately 30 per cent of the total steel manufactured.

Manufacturers of refinery and oil field equipment comprise a great manufacturing industry by themselves. Construction and building industries are greatly benefited by the constant growth of the oil industry with its changing methods of production and refining which result in causing equipment to become obsolete in a few years. The marketing division with its 170,000 company owned service stations representing approximately $1,000,000,000 investment, also gives added stimulus to the construction and material companies.

Big Business to Railroads

The transporting of crude and refined products by rail, tankers, truck, and pipe lines also serves to give an added volume of business to these industries and increase the nation's wealth. Petroleum ranks first in rail shipments, more than 150,000 tank cars being used in transporting petroleum products. Oil tankers represent more than 17 per cent of the total tonnage of American vessels engaged in transporting merchandise and other commodities and more than 10 per cent of the world's total tonnage. Trucking of petroleum products is now assuming a position of greater importance and during 1936 the automobile industry will be greatly benefited by the increased amounts being hauled over highways. Pipe lines serving the oil and gas industry represent an investment of more than $3,000,000,000 with the amount increasing yearly.

Another industry which has profited greatly through the petroleum industry is rubber. Of its total production 75 per cent goes into the automotive industry.

First From Depression

The petroleum industry, after emerging from the depression in which it was handicapped not only by general conditions but also by its own overproduction, has been the outstanding leader in recovery. More than any other industry it has maintained its volume of business nearest peak consumption and sustained employment at a higher level throughout the depression. Today it is regarded as being in a healthier condition than ever before with all branches of the industry striving to bring about more stabilized conditions. Consumption of gasoline during 1935 has reached an all-time record high and today is definitely aiming for new peaks in 1936.

The fundamental steadiness of the petroleum industry during the past six years is strikingly shown by the fact that the domestic consumption of gasoline in 1932 declined only 7.59 per cent from the previous peak established in 1931, in 1933 increased 1.28 per cent over that minimum, in 1934 was only 1.3 per cent below the 1931 high and then in 1935 established a new high. In contrast to this small decline of the oil industry, the production of finished rolled steel products dropped 74 per cent between 1929 and 1932, the production of coal 40 per cent and the production of new copper 75 per cent.

Improved Production Methods Have Doubled Total of Recoverable Oil

They recovered an estimated 15 to 20 per cent of the oil from a pool 20 years ago. Today they get twice as much.

Substitution of scientific methods for wasteful ones and the application of secondary recovery systems to older pools have made even more oil available than could have been produced under the old competitive system of drilling, which sought to bring to the surface the largest quantity of oil possible in the shortest possible time. Every man for himself and let the future take care of itself.

Conservation of natural reservoir energy, slower production rates per well, better equipment and improved technique have assisted in gaining this higher yield. For rapid rate of production the gas-lift has proven satisfactory and this method now is applied to wells below 6,500 feet in depth. It can be applied also to the recovery of oil in shallower pools with increased efficiency.

Secondary methods of recovery have been applied to many pools, notably in Pennsylvania, where water-flooding has increased the recoverable oil to 652,133,340 bbls. out of a total of 2,549,474,980 bbls. of oil in place. Water-flooding now is being applied to the oil sands of northeastern Oklahoma and it is estimated this method will add at least 100,000,000 bbls. of recoverable oil to the reserve of that area.

Vacuum and gas repressuring of oil sands also have materially increased the quantity of oil recovered in many pools.

Maintain Formation Pressure

More recently detailed study of the characteristics of underground reservoirs and determination of gas-oil ratios of oil in place, formation or bottom-hole pressures, production pressure curves and similar data have resulted in many fields yielding much greater volumes of oil with lower formation pressure drops than formerly were observed in pools produced without regard to formation characteristics. This advance in the science of producing oil wells will result in greater ultimate recovery and at the same time materially reduce the cost of lifting the oil.

One outstanding example of the benefits of orderly production and the application of modern engineering principles to pools of similar types is found by comparing the Maud field of the Seminole area in Oklahoma with the Keokuk Community No. 28 pool, also in Seminole County. Approximately 40 per cent of the expected ultimate recovery from the Maud pool was produced by natural flow during 10 per cent of the estimated life of the field, whereas at Community 28 it is expected the ultimate recovery of at least 75 per cent of the oil will be by natural flow. The recovery at Maud is estimated as approximately 74,000 bbls. per well compared with an estimated recovery of 300,000 bbls. per well at Keokuk Community 28.

Twenty years ago it was customary after drilling the hole and setting casing, usually using a cable-tool outfit, to drill into the pay formation slowly and test the sand and at the same time avoid drilling into water. If the well flowed freely it was connected from the casinghead direct to a gun-barrel flow-tank, in which the gas was allowed to escape to the atmosphere. The oil then flowed to wooden lease tanks. Open flow was continued until the well would no longer produce as much oil by this method as could be obtained by swabbing or pumping. If swabbing brought more oil than open flow or pumping, the former practice was followed until the operation became too costly for the quantity of oil obtained and the well then would be placed on the pump.

As cable tools usually were used in drilling in all parts of this country 20 years ago it was customary to leave the sand reel, bullwheel, calfwheel and other drilling appliances in the derrick after completing the well. This permitted the operator to swab or pump his well without additional surface equipment, so it was not difficult to put the well "on the beam" for pumping. The 5-inch rig irons in common use were not heavy. So it was economical to leave the drilling outfit at the well for producing it after completion.

If the sand was tight, the formation was shot with nitroglycerin and then the well was cleaned out if the shot did not release sufficient gas and oil to remove the cavings from the hole. In the main the operator 20 years ago used every effort to get the largest possible production from each well in the least time regardless of dissipation of formation energy. It was therefore not unusual to "blow" wells into production, that is, to permit the gas to escape from the upper part of the structure until such time as the oil moved up-dip to replace the gas and enter the bottom of the wells on the crest of the structure.

Such methods of production were wasteful. They resulted in production rates building up rapidly during the early life of the field and then dropping off with equal rapidity, so the pool would go through its peak drilling and producing stage early in its life, then passing into the pumping and stripper class, to continue for years.

After the well passed its flowing and swabbing stages it was customary to run tubing and install the common working barrel and rods for pumping. As the average depth of producing formations in this country in 1915 was about 3,000 feet, casing, tubing and iron sucker-rods were available only for such depths or at the maximum of 5,000 feet. To compare the old strings of tubing with present-day practice the following table is prepared:

	1915 Setting depths		1935 Setting depths	
Tubing sizes—	In tension safety factor 2½ (feet)	Collapse safety factor 2 (feet)	In tension safety factor 2½ (feet)	Collapse safety factor 2 (feet)
2-inch 4.7-pound	5,772	5,548	11,655	9,681
2½-inch 6.5-pound	5,798	5,156	11,709	8,997

Improvements in metallurgy, design, couplings and threads have brought about this great change in tubing during the past 20 years and deeper drilling has created the market for this higher-grade material.

After tubing had been run rods were selected for pumping the well and it was usual practice to use wooden rods in the Eastern fields. In the Mid-Continent fields five-eighths inch diameter iron sucker-rods were being introduced, while in California, three-fourths inch diameter rods were more commonly used.

Improvement in Rods

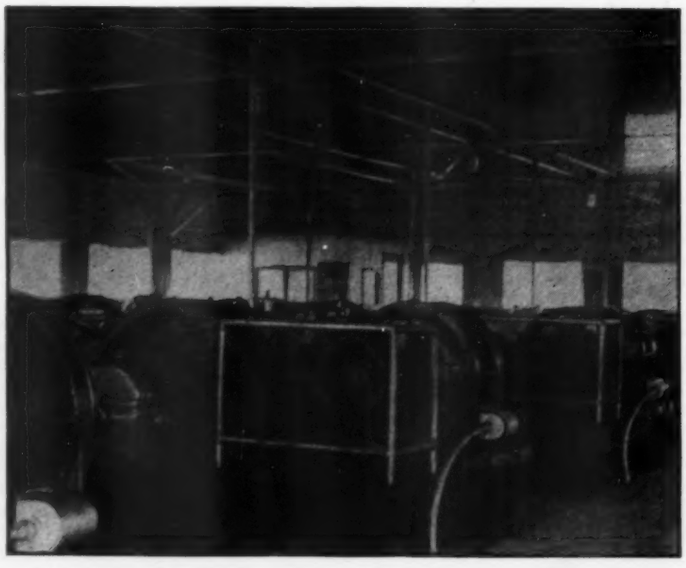
The operator gave little consideration to anything but price in making his selection of rods, and breaks were frequent and shutdown time correspondingly large. This condition was accepted as part of the routine operating conditions and if the operator found the five-eighths inch rods were not heavy enough for his duty he would buy the three-fourths inch size and try them.

Rod manufacturers realized much could be done to improve the quality of their product, but it was difficult to get well owners to consider higher-priced materials, and it was only through actual demonstrations of the advantages of better-quality rod stock and improved design of pins and threads that the higher-grade rods eventually were introduced into the industry.

Likewise working barrels were of the common type with leather cups, although composition cups were making their appearance about 20 years ago and the cast-iron barrels with cast-iron or steel plungers were being tried out in some fields. Machine work on the all-metal working barrels was not as accurate as it now is and tightness of fit between barrel and moving parts was considered more effective than accuracy of finish. It is now known a close fit that is accurate is more desirable than a tight fit poorly made.

The mechanics for pumping wells a decade ago resolved themselves into two main methods, one represented by the walking-beam left after drilling the well and the other represented by central powers. Backside pumping was a modification of central-power rod-line pumping. Pumping units were unknown and for the most part the rigs were built of wood and the only metal parts used consisted of the set of rig irons.

The rigs were powered with gas engines. Central powers also were driven by gas engines or, where gas was not plentiful, by steam engines. The bandwheel type of power predominated and rod-lines were made



Electric motor driven compressor plant for maintaining pressure

Reprints, suitable for framing, on request.

of iron much as sucker-rods were constructed, so breakage and shutdowns were frequent.

Checking back it is found the average life of pools completed in 1915 was about 13 years compared with 25 years estimated for wells drilled more recently. The formation energy was quickly dissipated and the U. S. Bureau of Mines has estimated about 20 per cent of the oil from the reservoir was recovered by the old methods. Other estimates place the recovery still lower.

During the past 20 years there has been gradual improvement in production methods. Secondary recovery methods have been applied to many fields with the result that oil is being ob-

Input well for water flooding project showing control valves and meter

tained that otherwise would have been left in the underground reservoirs.

Secondary recovery methods consist of gas repressuring, water-flooding and in some instances acidizing. Vacuum has been applied to some fields with good results, but it no longer is in wide use.

Depth of wells has been greatly increased during the past decade and there now are wells in this country producing from 10,000 feet while several pools range from 6,500 to 8,300 feet. These deep-seated formations for the most part have produced the major portion of their oil by natural flow methods but several are now on the pump or using mechanical production methods.

One intermediate step in production methods was to apply gas-lift to new wells to increase the rate of flow. By so doing a great excess of oil over current demand was made available and the price structure was influenced adversely. While gas-lift still is applied to wells, this method is not used until natural flow has ceased. Gas-lift is merely one of the many methods now used to recover oil by mechanical means.

There have been many improvements in production methods during the past 20 years, but all-round good mechanical practice has done as much to increase oil recovery as any one method of lifting the oil from the bottom of the hole.

Good casing and properly cementing it in the hole have given better shutoffs of upper water and gas sands, and permit the gas and oil from the reservoir to escape to the surface direct without losses in intermediate strata. Good casing practice has done much to control water movements in the formations and more recently casing strings have been set in such position as to shut off upper gas zones, reduce gas-oil ratios and conserve the gas energy within the reservoir to assist in producing the oil.

Sound Engineering Practice

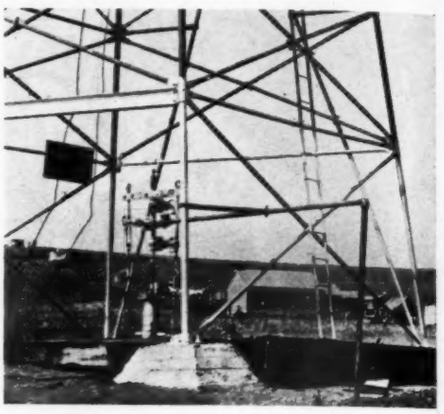
Within the past 20 years the industry has turned from rule of thumb or "practical experience" to the application of sound engineering principles in production practices. This movement was aided by work of the U. S. Bureau of Mines and since 1920 by engineering departments established within the different oil companies.

Investigations by various engineering bodies have been conducted primarily to determine conditions in natural reservoirs, dealing with factors throughout the reservoir system including the wells and their surface connections influencing the production of oil and gas. Well performance has been studied in all areas, and reservoir conditions in those fields were correlated. All these data were studied in accordance with the present knowledge of natural phenomena relating to the hydrocarbons and with the generally accepted principles in the producing branches of the oil industry.

These studies have resulted in definite rules being established covering the production of gas and oil from the different type reservoirs, doubling the percentage of recovery since 1915. In the Bradford field of Pennsylvania it has been estimated about 15 per cent of the original oil in the reservoir was recovered by the old production methods. By the application of water-flooding it is estimated from 40 to 50 per cent of the remaining oil in the reservoirs will be recovered, making a total recovery at the end of water-flooding of 52 to 60 per cent of the original oil.

While water-flooding has resulted in high additional yield the application of good production practices to the fields discovered in the past 10 years has resulted in many leases and individual wells producing much higher yields per acre. There are several fields in which production already has exceeded past total recovery per acre and there is still much oil remaining to be produced. Orderly rate of production is doing much to conserve natural energy in the reservoir and it is possible to predict in such fields the ultimate production will be much higher than was possible under open-flow methods.

Instead of flowing oil and gas into open gunbarrel tanks it is now almost universal practice to produce the wells into oil and gas separators and in this way save the gas for use in



Gas input well for recharging sands in South Burbank pool in Oklahoma

natural gasoline plants and at the same time maintain the original well gravity of the crude oil. After the gas and oil are separated in these tight separators the oil is handled in tight receiving tanks on the lease and leakage and evaporation losses have been reduced materially.

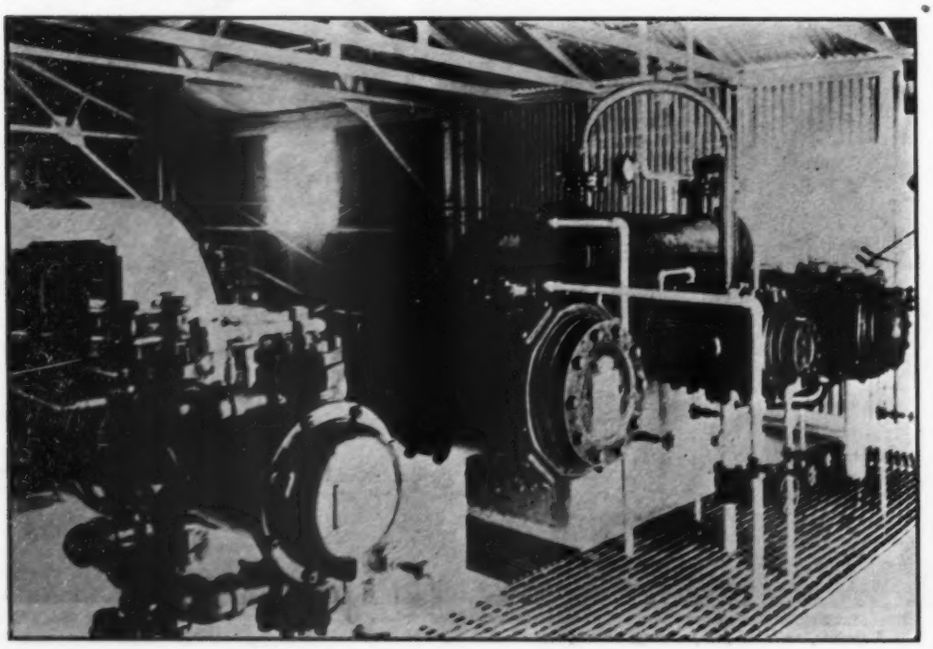
The use of high-pressure fittings at the casing-head on high-pressure wells has resulted in the reduction of loss formerly caused by wild wells and open flow in bringing wells into production. It is no longer considered good production practice to permit a well to flow open to the slush-pit while it is being completed. Gas is not blown into the air until the well starts to make oil nor are gas and oil wasted in making open-flow tests to determine the well's capacity.

A marked improvement has been made in the treatment of emulsified oil and methods are now available for breaking down emulsions formerly extremely hard to handle. The old gravity settling system is still used extensively and it is aided in many instances by the use of chemicals and heat applied in special heaters. The centrifuge also is used for many mixtures hard to separate, and electrical dehydrators have found favor in many fields for the separation of oil and water.

In addition to the production of oil by use of rods and working barrel several new devices have been introduced into the industry within the past 10 years. Intermittent gas-lift finds a place where formation pressures are low, and another form of production applied during the period between natural flow and straight pumping is use of the plunger lift.

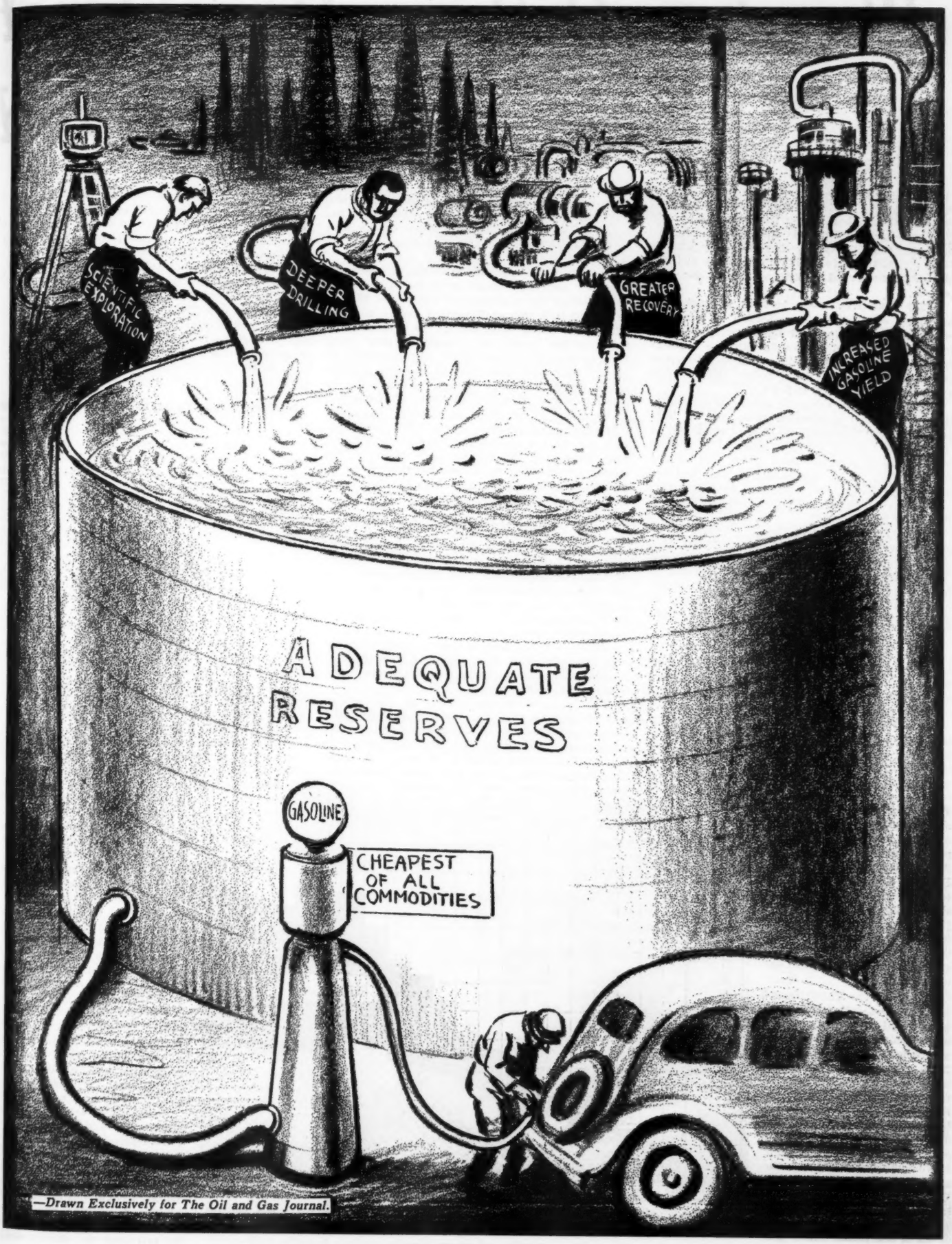
A variation in rod pumping is to be found in the use of the pneumatic pumping cylinders suspended in the derrick and actuated by compressed air or gas. Deep-well pumps also have made their appearance and are to be had in several forms. Bottom-hole pumps are finding favor in some fields producing from depths below 6,000 feet. The submerged electric centrifugal pump is being used to advantage both for straight lift to the surface and in combination with gas-lift to form a stage lifting device.

The industry has definitely proven it is possible to drill holes to depths in excess of 12,500 feet successfully and the manufacturers of pumping equipment have already taken steps to provide mechanical means for producing from these wells when oil is found in commercial quantities.



Compressor unit of combination repressuring and central pumping power plant

The Oil Industry's Record



—Drawn Exclusively for The Oil and Gas Journal.

The Oil Industry's Record

Twelve Billion Barrels of Oil Have Been Saved

Oil refineries now save twice as much crude as they use in furnishing the world with gasoline. That sounds like a "Believe it or not," and well it may, for that is exactly what is being accomplished today if we review the methods of manufacture used in 1915 as a basis for comparison.

That year was taken because it marks the beginning of a general application of cracking, efficient fractionation and the recovery of gasoline from gases and vapors. In 1915 the industry recovered 8 gallons of gasoline from each barrel of petroleum processed, while today the recovery averages better than 20 gallons.

So, due to these scientific developments and to their commercial application alone, the oil business has saved 12,000,000,000 bbls. of crude oil, an irreplacable natural resource, and did it without limiting the supply of cheap motor fuel at any time. In fact, while this saving in raw material was being effected, the number of passenger cars and trucks enhanced in number from 2,309,666 in 1915 to 26,000,000 today.

Since the beginning of the oil business as we now know it, approximately 17,590,000,000 bbls. of petroleum has been brought to the earth's surface within the borders of the United States. If these improvements in refining and the manufacture of natural gasoline had not been developed we would have needed 30,921,000,000 bbls. of crude.

Affects All Business

Obviously, what would have actually happened would have been that fewer cars would be on the streets, gasoline would be a luxury and our entire economic structure stunted.

On the other hand, if we would have tried to maintain the production and use of cars as has been done and the oil business had not improved its refining methods since 1915, we would have used up all of this 12,000,000,000 bbls. of oil referred to by authorities as our "proved reserves." Theoretically this country would now be without oil.

These facts reveal how important may become so-called "technological developments." Possibly the public would better appreciate the efforts of the oil business if it learned that through the past 20 years it had saved at least $15,000,000,000 in its oil bill or an amount equal to one-half of our national debt.

If all of the 12,000,000,000 bbls. of crude oil which have been saved were to be stored above ground so that its volume might be seen, it would fill a row of 55,000-bbl. tanks 820 miles long, spaced just 200 feet from center to center. Or, if this quantity of oil were to be held in one place it would occupy a space 1 mile long, 1 mile wide and 2,400 feet high. It would fill 1,900 buildings the size of the new Department of Commerce Building in Washington, D. C.

The saving of this quantity of oil is one factor which permits the United States to feel more nearly independent and self-sustaining than any country. The shutting off of oil supplies has been the principal subject of interest in the news of today as a principal means of terminating the Italio-Ethiopian war.

It will also be remembered that oil was the first raw material Europe called for in any great quantities at the beginning of the World War in 1914, and that was an important factor in determining the course of events in the early days of this so-called "period of modern refining" from 1915 to date, for it permitted the absorption of greatly increased quantities of gasoline and at prices which were high enough to encourage refiners to carry out heavy schedules of research.

Measured in the light of present happenings, that program of research was of course very limited and did not approach the $1,000,000 a month now being spent by the industry. However, the money provided for important laboratories in refineries located near Chicago, along the East Coast and on the Pacific Coast.

First Cracked Gasoline

It was from a laboratory in the Chicago area that the first news came regarding the new "synthetic" motor fuel. The material was first intended for use in trucks. It was not considered a premium fuel and some authorities felt that it could not be made fit for general use because of its offensive odor.

Except for the unusual demand created by the war for motor fuel, it is probable that the men who were developing the cracking process would have become discouraged.

This was all the more likely in view of the rapidly growing supplies of crude oil. California, Oklahoma, Texas and Illinois were adding to their production almost daily and this was coming on top of the normal supplies of crude oil from the Pennsylvania fields and from West Virginia, which states had been supplying the principal needs of the entire country up to this time. In fact, the supply of crude oil was running well ahead of actual demands and the United States government became concerned over the refining of that crude in sufficient quantities to make available an adequate volume for our navy and sought cost figures with the idea of financing a plant to be located at some point along the Gulf Coast. This was found impracticable and the expansion of the total refining capacity of the country during the months which followed eased the situation to the point where all such plans were abandoned.

PUBLIC GETS 60% MORE GASOLINE THAN IN 1926—

Year	Aver. filling station price cents per gal.	Average tax per gal.	Net price, cents per gal.	Domestic gasoline consump. (bbls.)
1926	23.26	2.34	20.92	261,813,000
1927	20.48	2.47	18.01	296,807,000
1928	20.71	3.08	17.63	332,033,000
1929	20.98	3.07	17.91	375,999,000
1930	20.10	3.77	16.33	394,800,000
1931	16.92	3.83	13.09	403,418,000
1932	17.39	4.09	13.30	373,900,000
1933	18.17	5.41	12.76	377,003,000
1934	18.76	5.16	13.60	407,106,000
1935*	18.75	5.21	13.54	427,464,000

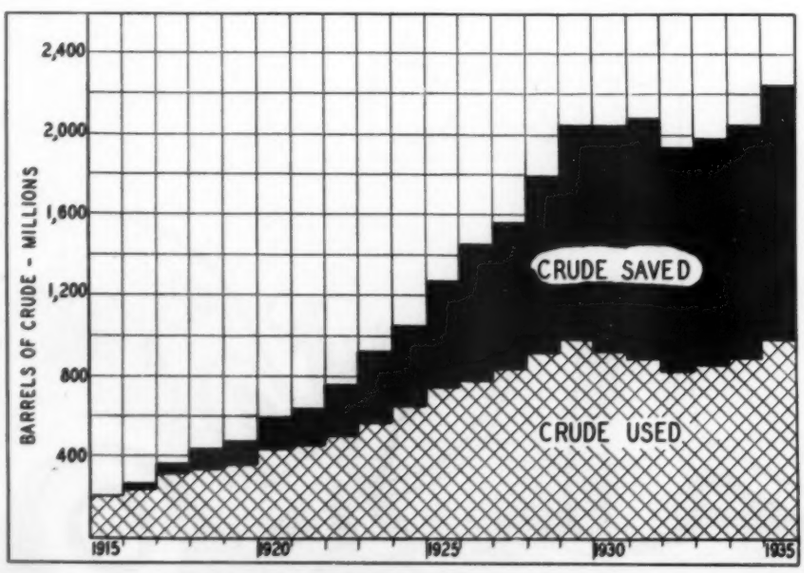
* Estimated.

In this call to meet the mounting demands for refined oils, plants were erected in the Mid-Continent, along the Gulf Coast and in California and at an unprecedented rate.

In this building program the ideas of the operators and the field men generally supplied the basic engineering principles upon which the structures were built. This accounts for the multiplicity of designs, the relatively inefficient operations and the relatively large expenditures made to accomplish comparatively little.

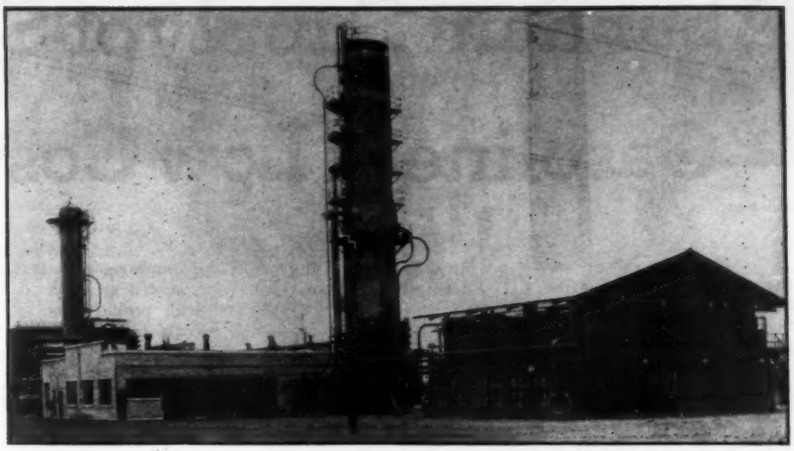
California refiners and East Coast refiners as groups probably showed the most interest in the elimination of costly conventional practices, especially those involving the distillation of the crude.

They first attacked the problem of more efficiently heating the oil and fractionating it into the products most in demand at that time. This move was given a substantial boost in California in 1915 when the first two distillation units were built to employ bubble cap towers and pipe stills. These two items not only simplified the equipment needed to distill the crude but turned out a much better series of products from the standpoint of quality and at a greatly reduced cost of operation. The adoption of this type of heating and fractionating equipment spread rapidly and accounted for increased yields of gasoline from the crude. In many plants these improvements accounted for increased yields of gasoline falling between 3 and 5 per cent of the oil processed, but the improved



More than 12,000,000,000 bbls. of crude oil has been saved over the period from 1915 to date through the improvement of manufacturing methods in supplying the demand for gasoline of more than a million barrels a day

Crude in Refining



Typical modern large volume cracking installation in the United States

yields, due to better fractionation, was soon to be lost to the greater yields of gasoline as the result of cracking, as may be seen in the accompanying chart.

To augment these new supplies of motor fuels, a new industry was being born to recover gasoline from gases. These gases were being produced along with the crude in the fields and at the refineries as a result of cracking operations.

The new industry called its product natural gasoline and at first it faced major marketing difficulties. The new product was too volatile to be handled or stored economically and a disastrous railroad accident in the Mid-Continent focused the attention of Bureau of Safety on this industry. After many practical tests, however, the industry not only found a means to stabilize the material so that it could be safely handled, but improved the quality of the product to a point where it gained recognition as a premium blending material in motor fuel.

OIL COMPANIES RECEIVE PRACTICALLY SAME MONEY

Retail cost of gasoline in U.S. incl. tax	Federal and state taxes	Cost to public free of taxes	Year
$2,560,000,000	$253,000,000	$2,307,000,000	1926
2,540,000,000	307,000,000	2,233,000,000	1927
2,875,000,000	430,000,000	2,445,000,000	1928
3,320,000,000	485,000,000	2,835,000,000	1929
3,330,000,000	625,000,000	2,705,000,000	1930
2,865,000,000	648,000,000	2,217,000,000	1931
2,730,000,000	642,000,000	2,088,000,000	1932
2,880,000,000	856,000,000	2,024,000,000	1933
3,210,000,000	882,000,000	2,328,000,000	1934
3,365,000,000	935,000,000	2,430,000,000	1935

Since that time the natural gasoline industry had supplied an increasing quantity of motor fuel yearly until 1929 in which year it reached a peak, as may be seen on the accompanying drawing.

Since that year the quantities supplied annually have been substantially under that of 1929, but during this period natural gasoline gained greater recognition as a superior blending material both for improving the antiknock value of the motor fuel and its volatility and at the present time conditions are shaping around to the point where the industry is looking forward to increased production schedules also. As volatility and antiknock value became recognized as important characteristics of motor fuel, new incentives were supplied in the direction of increasing cracking operations. Year after year the percentage of cracked gasoline grew larger in comparison with the quantity of straightrun manufactured and was not retarded by the introduction of Ethyl Lead in the form of Ethyl Gasoline February 1, 1922, a material which when added to straightrun gasoline brought its antiknock value up to that of most cracked gasolines. The popularity gained for gasolines of higher antiknock value through the expanded sales of Ethyl Gasoline probably aided the installation of cracking equipment as much as it might have retarded so that it is difficult to draw definite conclusions regarding this phase of the industry's program of making more and better motor fuels from the same crude oil.

Improved Quality

Undoubtedly the desire to improve quality was uppermost in the minds of refiners as large appropriations were made year after year up to 1929 for equipment. The purpose of this new equipment was not only to increase cracking but recover a greater quantity of vapors, reduce evaporation losses and further improve fractionation.

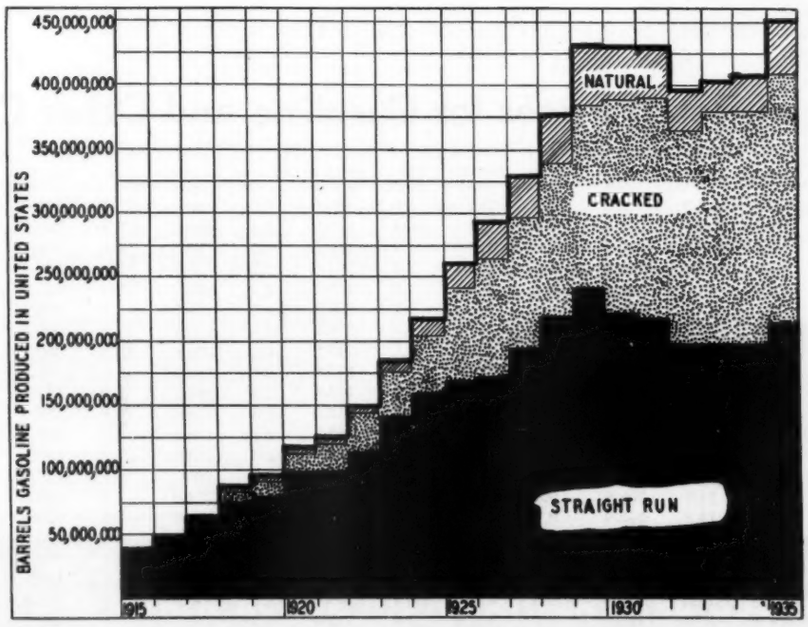
During the general economic depression that followed, the refining industry reduced the mad pace with which it was traveling in the direction of installing new equipment for expansion, but it redoubled its efforts to lessen the cost of operations and to improve the quality of its products.

In this period centrifugal dewaxing of lube stocks made possible the manufacture of low cold test motor oils, the use of acid clays in contact filtration and the improved means of revivifying natural fuller's earths made it possible to cheapen the cost of manufacture and improve the quality of lubricants and light oils treated in the vapor phase. To this list may be added many more such as solvent refining and dewaxing in the processing of high sulfur kerosene and lubricants, vacuum distillation of crude and lubricating stocks in the manufacture of asphalt, road oils and motor oils; the use of gum inhibitors, reforming, debutanization and, more recently, polymerization. Brief mention should be given this development in that the process utilizes gas and not oil as a charging stock. Cracked gases are already being utilized in the few commercial sized plants now operating and being built but over the future the process might be extended to utilize natural gases. The soundness of the principles employed in the polymerization process assures its expansion over the immediate future and from this source may come an additional 5 per cent motor fuel.

Polymerization

The term polymerization is now being applied to a variety or a combination of physical changes within the oil made possible by the application of heat, pressure and catalysts. The actual commercial practices employ ordinary gas cracking, dehydrogenation, polymerization and hydrogenation, all of which now seem to be included under the one head. The application of any one of them or combination is a relatively costly procedure but the quality of the product manufactured is so superior to the straightrun gasoline contained in the crude that substantial quantities of this new blending material will be sought.

Several important polymerization units have been in operation for months, others are now under construction and a great many units are in the drafting board stage. If general economic conditions continue to improve, the erection of such units will progress rapidly through 1936 and it seems reasonable to expect the production of the gasoline so manufactured to add close to 1 per cent to the total recovered from crude within the year. The effect of making polymerized gasoline from natural gas will not be felt soon for too many technological problems remain, but in time this source of motor fuel may be limited only by the volume of gas available which of course is large.



In the period from 1915 to date cracking and the recovery of gasoline from gases have contributed an increasing volume of motor fuel and at the present time these two sources are about as important as the straightrun gasoline

The Oil Industry's Record

Abundant Supply of Steadily Improved Gasoline at Low Cost Industry's Job

What does a consumer want in the product he buys? First, he wants serviceability, either in durability or in results from its use. Second, he wants to obtain it at a fair price—to feel he has got his money's worth. Next, he wants to be able to get it when and where he wants it.

The oil industry offers the record as proof that it has met each one of these requirements in keeping pace with the demands of the American car owner.

From the day when the American people first took to the automobile the oil industry has anticipated every development, every expansion of demand, no matter how amazing.

Back in 1913 when car registrations passed the first million — one happy car owner to every 75 of the population—we produced 1,260,000,000 gallons of gasoline a year. This was 984 gallons a year for each motorist and at the current price, 16.6 cents, it figures out $163.34 a year.

This year 26,000,000 car, truck and bus owners are averaging 690 gallons a year for which the industry is averaging 13 cents a gallon or $89.70 a year, which is $73.64 less than the 1913 average, or almost half.

But, you will say, how about the gasoline tax which brings the cost per gallon up to 18.5 cents today. Well, the gasoline tax averages 5.5 cents or $37.95 for the 690 gallons.

Add the tax to what the industry gets today and the total is only $127.65 or $35.69 less than in 1913.

And the motorist today uses his car as a daily necessity instead of for an occasional outing as in 1913, travels at three times the average speed of those days and thousands of miles where they ventured hundreds.

With all due credit to the motor car manufacturers and their unceasing effort for improvement their industry could never have expanded as it has or the great mass of the American people been so quickly put in possession of cars had not the oil industry maintained an unfailing supply of a constantly improved motor fuel and motor oil at a price they could afford.

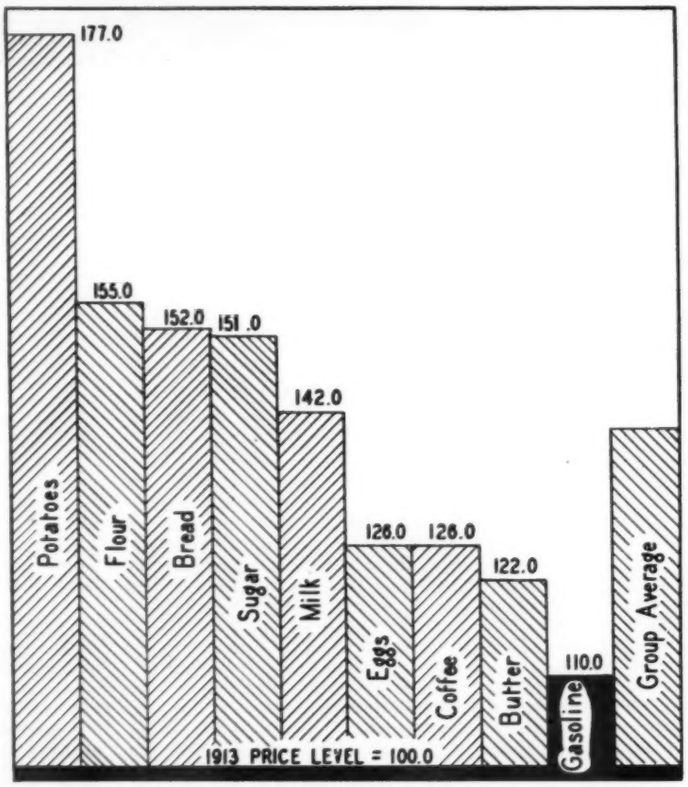
More than that, the oil industry kept that price so low that the states and federal government were able to add a tax on that gasoline of hundreds of millions of dollars which has built and maintained a network of highways for motor travel throughout the country.

And wherever the motorist rolls along these highways he is assured of an unfailing supply of fuel and every service he needs at conveniently situated stations maintained for his requirements by the oil industry.

Consider, first, the matter of serviceability—how much more the motorist gets out of gasoline today than 20 odd years ago. And how many million more motorists. Think back to the days before the outbreak of the World War and recall how few owned a car or ever thought of owning one. Those who did (except a few "idle rich" who could take time for touring) thought a 100-mile from home ride something to talk about for days. The use of a car for riding to and from work was still a rarity evoking envious comment. For one thing there was always the risk of something going wrong with the car. And buying gasoline was still regarded as an expense, not a commonplace of living as now.

The World War, with its rise in prices, gave millions the hope and the means of owning a car and by 1920 there were almost 10 times as many cars and trucks in this country as in 1913. Improvements in cars and in the energy obtained from improved gasoline had reduced the average consumption per car to about 400 gallons a year.

And here's a remarkable thing. In 1920 the recovery of gasoline nat-



Average price level of gasoline and other staple commodities from 1913 to 1935, inclusive. Figures from U. S. Department of Commerce

Comparison of Retail Prices for Gasoline and Other Commodities

Compiled From Bureau of Labor and Department of Commerce Statistics

Year	Eggs per doz.	Relative price	Butter per lb.	Relative price	Milk per qt.	Relative price	Bread per lb.	Relative price	Flour per lb.	Relative price	Potatoes per lb.	Relative price	Sugar per lb.	Relative price	Coffee per lb.	Relative price	Gasoline per gal.	Relative price
1913	34.5	100.0	38.3	100.0	8.9	100.0	5.6	100.0	3.3	100.0	1.7	100.0	5.5	100.0	29.8	100.0	16.6	100.0
1914	35.3	102.3	36.2	94.4	8.9	100.5	6.3	112.5	3.4	103.9	1.8	108.3	5.9	108.2	29.7	99.7	14.0	84.4
1915	34.1	98.7	35.8	93.4	8.8	99.2	7.0	125.0	4.2	125.8	1.5	88.9	6.6	120.1	30.0	100.6	12.7	76.5
1916	37.5	108.8	39.4	103.0	9.1	102.2	7.3	130.4	4.4	134.6	2.7	158.8	8.0	146.4	29.9	100.3	19.9	120.0
1917	48.1	139.4	48.7	127.2	11.2	125.4	9.2	164.3	7.0	211.2	4.3	252.7	9.3	169.3	30.2	101.4	21.6	130.0
1918	56.9	164.9	57.7	150.7	13.9	156.2	9.8	175.0	6.7	203.0	3.2	188.2	9.7	176.4	30.5	102.4	22.7	136.8
1919	62.8	182.0	67.8	177.0	15.5	174.2	10.0	178.6	7.2	218.2	3.8	223.5	11.3	205.5	43.3	145.3	24.2	145.8
1920	68.1	197.4	70.1	183.0	16.7	187.6	11.5	205.4	8.1	245.5	6.3	370.6	19.4	352.7	47.0	157.7	28.5	171.7
1921	50.9	147.5	51.7	135.0	14.6	164.0	9.9	176.8	5.8	175.8	3.1	182.4	8.0	145.5	36.3	121.8	24.3	146.3
1922	44.4	128.7	47.9	125.1	13.1	147.2	8.7	155.4	5.1	154.6	2.8	164.7	7.3	132.7	36.1	121.1	23.7	142.7
1923	46.5	134.8	55.4	144.7	13.8	155.1	8.7	155.4	4.7	142.4	2.9	170.6	10.1	183.6	37.7	126.5	19.5	117.4
1924	47.8	138.6	51.7	135.0	13.8	155.1	8.8	157.1	4.9	148.5	2.7	158.8	9.2	167.3	43.3	145.3	19.1	115.0
1925	52.1	151.0	54.8	143.1	14.0	157.3	9.4	167.9	6.1	184.8	3.6	211.8	7.2	130.9	51.5	172.8	19.92	120.0
1926	48.5	140.6	53.1	138.6	14.0	157.3	9.4	167.9	6.0	181.8	4.9	288.2	6.9	125.5	51.0	171.1	20.92	126.0
1927	45.2	131.0	55.6	145.0	14.1	158.0	9.3	166.0	5.4	164.0	3.8	224.0	7.3	133.0	48.3	162.0	18.01	108.0
1928	46.4	134.0	56.5	148.0	14.2	160.0	9.1	162.0	5.3	161.0	2.7	159.0	7.1	129.0	49.2	165.0	17.63	106.0
1929	49.0	142.0	55.1	144.0	14.3	161.0	9.0	161.0	5.0	152.0	3.2	188.0	6.6	120.0	49.1	165.0	17.91	107.0
1930	41.0	119.0	46.1	120.0	14.0	157.0	8.7	155.0	4.6	139.0	3.6	212.0	6.2	113.0	40.6	136.0	16.33	98.0
1931	31.7	92.0	35.4	92.0	12.3	138.0	7.6	136.0	3.5	106.0	2.3	135.0	5.7	104.0	33.8	113.0	13.09	78.0
1932	27.2	79.0	27.4	72.0	10.9	123.0	6.8	121.0	3.1	94.0	1.7	100.0	5.1	93.0	30.2	101.0	13.30	80.0
1933	26.1	76.0	27.3	71.0	10.6	119.0	7.1	127.0	3.8	115.0	2.3	135.0	5.4	98.0	27.1	91.0	12.76	76.0
1934	29.9	87.0	31.1	81.0	11.3	127.0	8.2	146.0	4.8	146.0	2.3	135.0	5.6	102.0	27.4	92.0	13.6	82.0
1935	36.3	105.0	35.1	92.0	11.8	133.0	8.3	148.0	5.2	158.0	1.9	112.0	5.7	104.0	26.1	88.0	13.54	81.0
Average.	**43.4**	**126.0**	**46.8**	**122.0**	**12.6**	**142.0**	**8.5**	**152.0**	**5.1**	**155.0**	**3.0**	**177.0**	**8.3**	**151.0**	**37.7**	**126.0**	**18.4**	**110.0**

BRIDGEPORT

USED AND REBUILT EQUIPMENT DEPARTMENT

Our Used Equipment Department offers operators large and small an opportunity, in many instances, to reduce equipment investments and save many dollars with no sacrifice in operating efficiencies. Many items in our stocks will serve the purpose in the development program as well as new equipment, and where this is the case a sizeable saving in investments and costs may be effected.

We are continually acquiring, repairing and rebuilding used equipment so that our stocks always represent a large variety of money-saving-values. Here are a few representative items, offered subject to prior sale. Our stocks, conveniently located with reference to the active fields, contain hundreds of others.

If what is needed is not listed here, phone any Bridgeport Store, Office or Representative for information on the items you are interested in. We can usually supply what is wanted.

We have a number of especially attractive values in rebuilt, used Rotary Slush Pumps at this time, including two Johnson Gumbo Buster's size 12x6 ¼x16-inch; (2) Lucey H-12000's size 14½x7½x16-inch, etc. These pumps are all guaranteed to be in first class condition. In stock at centrally located points. Will arrange for cheap transportation to any locality in the Mid-Continent or Gulf Coast.

CABLE TOOLS

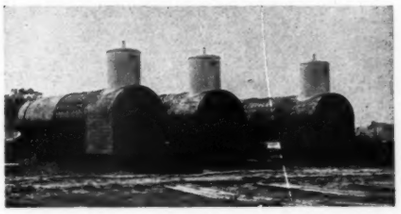
Well assorted stocks, practically complete as to sizes of used cable tools, including Bits, Bailers, Stems, Drilling Engines, Sockets, Fishing Tools, and pipe tools.

TRAVELING BLOCKS

1—4-sheave Lucey Roller Bearing, overhauled—Pampa.
1—66", 4-sheave Union Tool, roller bearing with guards.
1—65", 4-sheave Lucey—K-1600, overhauled—Pampa.
1—76", 4-sheave Type 3B Regan with guards—Houston.
All in first class condition. Will move anywhere.

DRILLING DERRICK

80-ft., 4-in. leg Emsco Angle Iron Derrick with A-Front and 4-in. Relegs; Crown Block; Steel Bull Wheels; Steel Belt House; Engine House; and foundation Timbers. Located in Western Kansas.



At Pampa a 73-h.p., 150-lb. Acme Boiler in excellent condition, and 2 first class 60 h.p., 150-lb. WP Donovan Boilers.
At Russell a 60-h.p., 150-lb. WP Donovan Boiler.
At Wichita a 45-h.p., 125 lb. WP Broderick Boiler.
These boilers have been overhauled. Flues are in good condition and they will bear rigid inspection. Suitable for lease work or cable tool drilling.

PUMPING ENGINE

35-h.p. Marion Gas Engine complete with Type C-11 Reversible Clutch. Has been completely overhauled—cylinder rebored, new piston and rings installed and other necessary repairs made to place it in A-1 condition. Located at Pampa. Reduced price.

DIESEL ENGINE

90-h.p., Fairbanks-Morse with O. C. S. Countershaft Clutch, Air Starting Unit and Electric Generator. Completely overhauled and guaranteed to be as good as new from practical standpoint. Located at Wichita. Can ship anywhere. Good price.

STEAM PUMPS

Several 10x3x10" Gardner-Denver "Line-Type" High Pressure Duplex Steam Pumps. Completely rebuilt and guaranteed to be in A-1 condition. Suitable for Boiler Feed Service, Line Pipe Service, etc. On hand at Wichita, Oklahoma City and Houston. Attractive prices.

Several overhauled and Bridgeport Unitized Rotary Draw Works of various makes, including 7½-in. Roller Bearing Ideal, 8-in. Model A Johnson; 6-in., B-1500 Lucey, etc. These are genuine values as the original draw works were obtained at attractive figures. Located in Texas, Oklahoma and Kansas. Will arrange for cheap transportation to any locality.

Call us when you want new equipment of any kind. In addition to our own extensive line of manufactured products, we stock and distribute the proven equipment of the industry's foremost manufacturers. Our prices are always competitive—terms reasonable—service unsurpassed.

A telephone call to any of our stores or offices will bring you timely and worthwhile information when you want it.

Call "station-to-station" day or night, from anywhere

BRIDGEPORT MACHINE COMPANY
MANUFACTURERS DISTRIBUTORS
OIL DRILLING-FISHING AND PRODUCTION EQUIPMENT
GENERAL OFFICE AND WORKS: WICHITA, KANSAS

HOUSTON - DALLAS - KILGORE - PAMPA - TULSA - OKLA. CITY - McPHERSON - HUTCHINSON
CHASE - RUSSELL - AND OTHER ACTIVE MID-CONTINENT AND GULF COAST POINTS

urally in the crude oil amounted to only 3,192,000,000 gallons but the total demand for the 9,232,000 cars and trucks registered amounted to 3,692,000,000 gallons, which was a half billion gallons short of the need for domestic consumption, to say nothing of 640,000,000 gallons exported.

Actually, however, we produced, by the addition of cracking and the recovery of gasoline from gas, 4,032,000,000 gallons, or 840,000,000 gallons more than was obtainable in straightrun gasoline.

So that had it not been for the oil industry's enterprise and skill 2,000,000 of the 9,232,000 motor owners of 1920 needing 400 gallons a year each would have been unable to obtain it from the processes used in 1913, even without allowing anything for exports.

It has been only through the increase in the recovery of gasoline from about 16 per cent of a barrel of crude in 1913 to 44 per cent today that enough gasoline has been available at a price the average car owner could pay to encourage him to buy and operate a car. The popular use of the motor car has been due solely to the research and progress of the oil industry, in scientific search for oil reserves, in the advance of engineering knowledge by both oil men and equipment manufacturers which developed deeper drilling to new pools and more efficient production, and technological achievements which evolved a larger recovery and a continually improved quality of motor fuel.

The motorist of today can start on a cross-continent trip with every confidence in his car and his fuel, and with assurance that he can attain and maintain speeds that would have been deemed preposterous for ordinary motoring back in 1913.

Now as to price. A superior product, giving the purchaser greater results, usually costs more to produce and commands a higher price. Notwithstanding the vastly increased investment required by the oil industry to enlarge and improve its output the fact remains that gasoline today is selling for less than 20 years ago as shown in the accompanying table. It costs the consumer today one-third less (exclusive of tax) than it did in 1916.

That is the straight comparison on gasoline itself. The contrast is even more striking when applied to retail prices of other commodities in daily use. The government's own figures show that the average index figure for gasoline over the past 20 or more years has been the lowest of all commodities of general consumption, as illustrated in the accompanying graphic sketch and table, gasoline averaging 110 against the 1913 standard of 100, while butter averaged 122; eggs and coffee, 126 each; milk, 142; sugar, 151; bread, 152; flour, 155, and potatoes soared to 177.

Turning to the Department of Commerce figures on wholesale prices we find that the index number for petroleum products in September 1935,

Filling stations along California highways take on local color

AVERAGE FILLING STATION PRICE IN THE UNITED STATES

(Cents per gallon)

	Without tax	Tax January 1	Price to public
1913	.....	.....	16.6
1914	.....	.....	14.0
1915	.....	.....	12.7
1916	.....	.....	19.9
1917	.....	.....	21.6
1918	.....	.....	22.7
1919	.....	.....	24.2
1920	28.4	.10	28.5
1921	24.3	.12	24.42
1922	23.7	.33	24.03
1923	19.5	1.30	20.80
1924	19.10	1.32	20.42
1925	19.92	1.76	21.68
1926	20.92	2.34	23.26
1927	18.01	2.47	20.48
1928	17.63	3.08	20.71
1929	17.91	3.07	20.98
1930	16.33	3.77	20.10
1931	13.09	3.83	16.92
1932	13.30	4.09	17.39
1933	12.76	5.41	18.17
1934	13.60	5.16	18.76
1935 (estimated)	13.54	5.21	18.75

(latest announced) was only 51.3 compared with 100 in 1926, while the index number for all commodities was 80.6. Farm products were 79.5; foods 86.1.

On the matter of price there can be no question that the consumer of gasoline is surely getting his money's worth from the oil industry.

We come next to the matter of service, availability of the product to the consumer. The Department of Commerce census reported 170,424 filling stations in 1933 and there are 130,000 other gasoline sales outlets, such as garages, repair shops, accessory stores, battery shops, tire shops, and automobile dealers, most of whom retail petroleum products needed by the motorist.

The filling stations alone report 156,451 proprietors and 143,626 employes, with the annual payroll in 1933 of $163,938,000. The industry has invested $1,120,000,000 in stations and bulk stations. In all there are some 450,000 gasoline pumps scattered around the country. And unlike other commodities, the consumer, wherever he may be, is never told that "we are just out of it, but we're getting some in next week."

Furthermore, as everyone knows, the oil industry's service to the motorist does not end with the sale of motor fuel or motor oil. The service station has well earned its name. It is the model of service to the customer, unapproached in any other retail establishment. Where else does the buyer have thrown in the extra attentions and aids that are furnished absolutely free of charge at the filling stations?

Keeping Up With Demand

No matter how rapidly the output of the automotive industry increases, every purchaser of a car or truck is assured of an ample supply of motor fuel and motor oil by the oil industry. No potential buyer of a car ever hesitated on any thought that the supply of gasoline might run out before he got his money's worth out of his purchase.

An output of 4,150,000 cars and trucks in the United States and Canada is indicated for the year 1935, according to report just made to the directors of the Automobile Manufacturers Association by Alfred Reeves, vice president.

This surpasses all years back to 1929 and exceeds last year by 45 per cent.

Indicating the increasing use of trucks for transportation is the figure of 760,000 units, which is the second largest year on record, being exceeded only by 1929 when approximately 66,000 more units were made.

Production of trucks in the fourth quarter will establish a new high record.

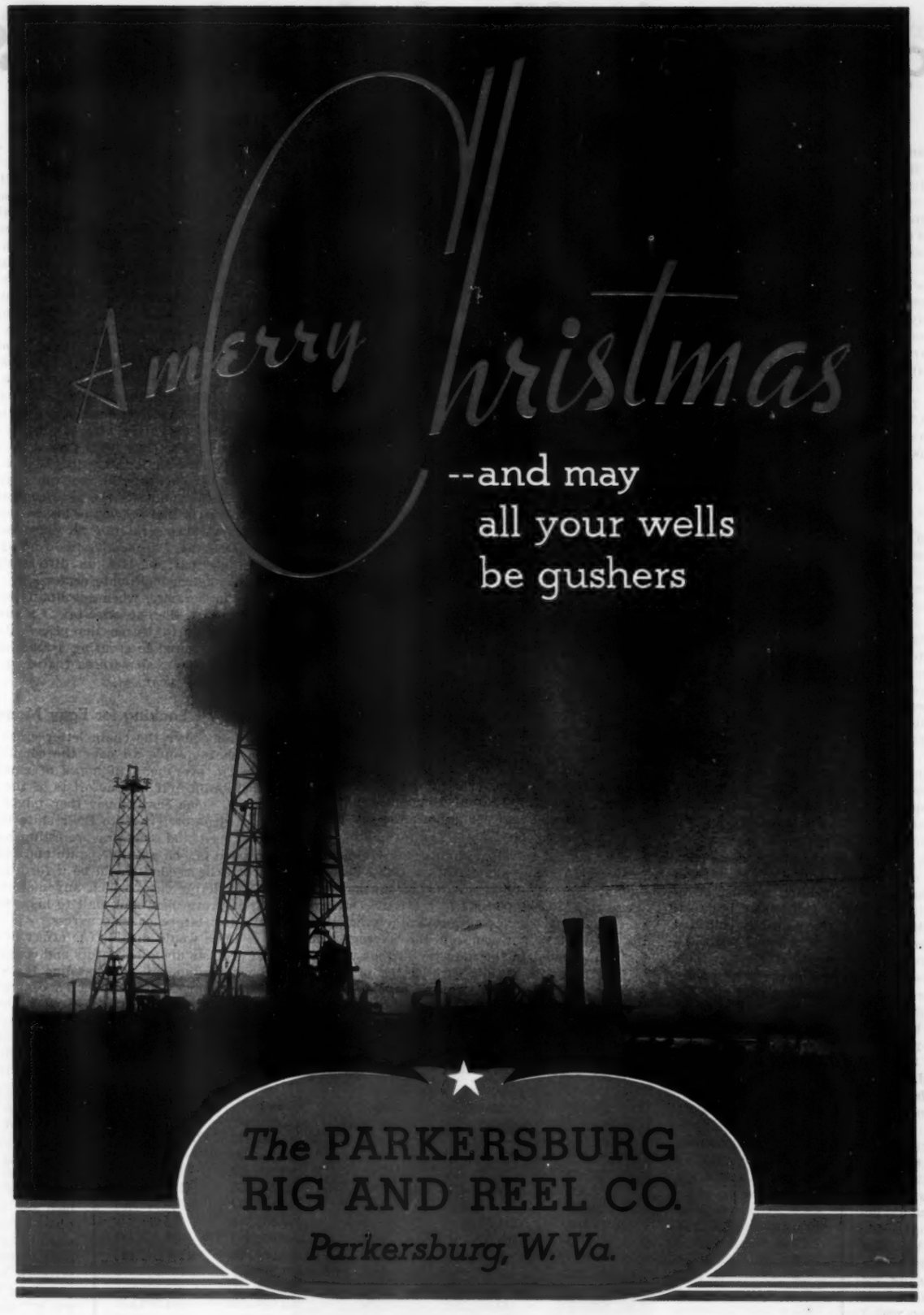
Mr. Reeves estimated that registration of all cars and trucks combined at the end of the year based on reports from the states will approximate 26,000,000 vehicles—a gain of about 4¼ per cent over last year.

Of this number, 3,550,000 are commercial vehicles, setting a new high record by exceeding the 1930 registrations of 3,486,000.

Sales of American cars outside of the United States during the present year will be about 550,000—a gain of 29 per cent over 1934, the foreign sales representing 13½ per cent of the total production.

Production of passenger cars equals 26.3 per cent of the estimated year's output and the fourth quarter production of trucks comprised 25.1 per cent of the year's truck output. During the last half of 1935 passenger car production comprised 42 per cent of the year's total, while the last half of the year included 46 per cent of the year's output of trucks. It is expected that next year the percentage of passenger cars sold in the last half will approach 50 per cent.

Super-service station popular in a metropolitan center


A merry Christmas
--and may
all your wells
be gushers
The PARKERSBURG
RIG AND REEL CO.
Parkersburg, W. Va.

The Oil Industry's Record

Gasoline Taxes Collected Since War Equal Europe's War Debts to U. S.

The American people have paid, since the war, $11,000,000,000 in taxes on motor transportation or a sum equal to Europe's total war debt to the United States.

We gave Europe 64 years to pay that sum and they said it was impossible. The American motorist paid it in 16 years.

Our gasoline tax alone collects each year more than enough to pay the annual interest on our own national debt.

What we pay in taxes on gasoline each year would pay the entire cost of maintaining both our navy and our army.

The total expenditures for running the postal service of the country in 1933 was $700,006,257. The state and federal taxes on gasoline in that year were $709,321,700.

The 1934 taxes on gasoline are estimated to reach $735,000,000, or more than the entire cost of running the United States government as recently as 1916.

Take a Breath!

The question immediately arises, how did the American motorist ever come to submit to such exactions.

There are two guesses. First, because he was told at the outset that the original fractional tax on each gallon of gasoline was going to build him more and better roads. The roads the early-day motorists had to travel on in this country were, compared with present-day standards, not even as good as the early cars and motor fuel, and as the motoring population grew and cars and gasoline improved the desire to go places expanded a great deal faster than the passable roads then existing.

Having inoculated the car owner with the idea that he was getting good roads for his gasoline tax it was simple and easy to give him another shot and convince him that the more tax he paid the more highways he would have.

Theoretically, yes, up to a point. In some cases state highway departments actually found themselves unable to keep construction abreast of income. About this time the politicians began to see the possibilities of this tax so easily collected. Diversion of the tax from its original purpose—highway construction—followed, at first without much noise about it, and later openly and boldly.

But still the motorist, often unaware that the money he was paying in gasoline tax for road improvement was being diverted to other purposes and even into the general tax fund, grumbling a little here and there occasionally if gasoline went up half a cent, clung to the original idea that his money was getting him improved roads.

That persistent delusion ran along beside another, even less tenable, which was that he did not pay the tax but that it was aimed at the oil business which he imagined could well afford to foot the bill.

It has been this idea, as much as anything, that has made it possible for the politicians to collect over $4,518,000,000 from the consumers of gasoline since the gasoline tax was first levied in 1919.

PETROLEUM TAXES IN 1934

State gasoline taxes	$565,027,000
Federal gasoline taxes	170,109,269
Real and personal property taxes	130,000,000
Income taxes (federal, state and city)	50,000,000
Severance taxes (state, county, and municipal)	25,000,000
Federal lubricating oil taxes	24,843,489
Federal pipe line transportation taxes	10,008,692
Municipal gasoline taxes	10,000,000
State reg. and license fees on tank trucks, etc.	10,000,000
Capital stock tax	9,955,000
Federal and state excise taxes on tank trucks and other vehicles	7,952,380
Corporation franchise, stock, and mercantile licensing and inspection taxes	3,620,000
Federal taxes on new tires for old tank trucks, etc.	4,132,660
State inspection fees, drilling permit fees, etc.	3,620,000
Federal excise taxes on crude petroleum processed	810,695
Federal and state taxes on parts and accessories for tank trucks	1,070,390
Federal import tax on crude products	8,052,576
Other taxes	11,947,424
Total	$1,046,149,575

Just how absurd this notion is may be seen from a glance at the price of gasoline, with and without the tax. The oil companies have been getting less and less per gallon; the tax collector more and more.

The annual petroleum industry investment over the past 14 years was $10,313,000,000. The actual annual earnings of the industry in that period averaged $175,860,000 or 1.70 per cent. During the same period the taxes on gasoline averaged $322,760,000 or 3.13 per cent on the average annual total investment in the industry in that time.

The taxes on gasoline which the oil business collects at the pump are turned over to the state and federal collectors, the filling station man acting merely as tax collector for the state and government.

Where then does anybody get this idea that the oil business can afford to pay such a tax out of its earnings which would not make half of the tax total? The sooner the public realizes that the tax is paid by the consumer as much as the income tax, the sales tax or any other, the quicker will the consumer do something about it.

The oil industry is affected by the adverse effects of the tax on the oil business. It has to bear the costs of collecting the tax including the extra filling out of forms and returns and keeping of books that goes with it. A 100 per cent tax on the wholesale value of gasoline, or a 40 per cent tax on the retail price of gasoline, is a drag on demand, cutting down consumption proportionately, as the price plus tax bears down on the motorist. This has been proved in actual experience where an increase in the tax has been followed by a marked decrease in consumption.

Another phase of the tax question affecting the industry is that when the tax becomes too high it invites racketeers into the gasoline business because if they can bootleg tax-evading gasoline they can use part of the tax differential to cut the price against legitimate dealers.

Furthermore, when gasoline is being sold at or below cost, the excessive tax is a handicap against any effort to better the price. The industry is thus hampered in securing a reasonable return on its operations, as witness that 1.66 per cent over the past 14 years.

Looking for Easy Money?

Remember the chain letter craze of a year or so back—people all over the country writing letters to everybody in hopes of getting something for nothing? If the motorists of the country want to get some easy money they might start writing postcards or letters to their state legislators, congressmen and senators protesting against the excessive tax on gasoline, state and federal. All that would be needed would be a form card, as in the chain letter case, which any motorist could copy or improve upon and mail to his representative in the legislature or in congress.

If he would do this the effect of such a deluge of protests upon legislators and congressmen would be instantaneous. The gasoline taxes now average $35 a year. A reduction of a cent a gallon would mean $7 a year to the man who takes the trouble to write a postcard—which is $7 more than the multitude of chain letter writers got.

Any group of car owners in a community interested in starting this protest might do it by having their local newspaper publish the names of the congressmen and legislators and their districts so that any car owner could tell his particular representative to write to.

"Send a postal and win $7" would be a good slogan for demanding a cent reduction in the gasoline tax to start with. Every motorist should send a blank form or postal to half a dozen of his friends.

PETROLEUM INDUSTRY INVESTMENT, EARNINGS, AND TAXES

Year	Estimated investment	Petroleum industry net earnings	Per cent earned on investment	Gasoline sales tax	Total taxes
1921	$ 6,550,000,000	$ —1,841,457	— 0.03	$ 5,382,111	$ 108,773,631
1922	7,377,375,000	221,615,211	2.81	12,703,088	130,257,611
1923	8,000,000,000	76,355,904	0.95	38,566,338	132,553,181
1924	9,150,871,000	227,938,411	2.49	80,442,995	198,314,190
1925	9,500,000,000	471,106,534	4.96	148,358,087	309,393,266
1926	10,000,000,000	475,393,629	4.75	187,603,231	368,368,572
1927	10,500,000,000	104,324,161	0.99	258,838,813	398,922,804
1928	11,000,000,000	386,516,430	3.51	304,871,766	487,546,224
1929	11,500,000,000	456,495,196	4.54	431,311,519	625,680,870
1930	12,000,000,000	92,439,088	1.38	493,865,117	670,606,663
1931	12,100,000,000	— 333,903,133	—*2.76	536,397,438	684,777,687
1932	12,200,000,000	—*182,400,000	—*1.50	575,887,066	747,097,125
1933	12,000,000,000	*204,000,000	1.70	709,321,700	1,004,824,028
1934	12,000,000,000	264,000,000	2.20	735,136,269	1,046,145,575
Averages and totals 14 years	$10,312,731,857	$2,462,039,974	1.70	$4,518,685,538	$6,913,265,432

Interstate Compact Commission Lays Groundwork for Uniform Laws

OKLAHOMA CITY, Okla., Dec. 14.—The Interstate Oil Compact Commission meeting here laid groundwork for a wide survey of the oil industry in all states with a view of recommending uniform legislation early next year.

Part of the survey work has been completed, the commission was advised by Col. E. O. Thompson, chairman of the Texas Railroad Commission, who is chairman of the committee on coordination. The Texas delegate filed with Art L. Walker, commission secretary, his preliminary report containing a compilation of all oil and gas laws in the various states. These laws have been codified and indexed.

The final report of this committee will contain recommendations for uniform laws. It should be completed by time the commission next meets in March, 1936.

Surveys started and now under way, all looking toward uniformity of action, include one on conservation of oil and gas, which is to be handled by Marvin Lee, technical advisor of the Kansas Corporation Commission. This committee is headed by Homer Hoch, chairman of the Kansas Corporation Commission. Mr. Hoch reported that the survey would extend to production methods, drilling methods, storage facilities, transportation, and other technical features.

Mr. Lee will hold conferences in the oil states with technicians and engineers with a view of adopting the best methods for his recommendations.

Although the U. S. Bureau of Mines estimates on consumptive demand for petroleum have been approved by the commission, a committee headed by Hiram M. Dow, of Roswell, N. Mex., is studying the methods used by the states in determining their demand figures and ways of arriving at pool allocation. Mr. Dow recommended that his committee be empowered to study the Bureau of Mines system.

The imports and exports committee, headed by William Bell of Robinson, Ill., held an extensive conference prior to meeting of the commission and among those heard was Harold B. Fell, executive vice president of the Independent Petroleum Association of America, and of the National Stripper Well Association.

Mr. Bell's report to the commission stated the committee had found "that imports of petroleum have a very important influence on the domestic situation, and therefore must be taken into account in planning the proper conservation and development of the domestic industry." The report carried no recommendations.

Although not put to a vote, it was the consensus of the delegates that the commission should make no report of its activities to President Roosevelt or to any federal agency.

Such a report was suggested by Governor E. W. Marland of Oklahoma, chairman of the commission. The delegates could see no objection to the chairman making a personal report to the president, if he desired, but suggested that such a report be in no wise considered an official act of the commission.

Mr. Hoch sounded the keynote of the meeting when he stressed need of a broad consideration of problems of the industry which come within scope of the compact program. Such work, he pointed out, must not be rushed but problems should be approached carefully and with an open mind.

"Justification of this commission rests upon a broad consideration," he said. "Our consideration must extend to the public for we must conserve their vast natural resources.

"The welfare of the industry must be considered and should be balanced against the welfare of the nation as a whole. We are here, not for a narrow or selfish nature, but to promote a broad national welfare, the fundamentals of which we should not lose sight of.

"If out of all this we are able to improve the oil industry, then we will feel rewarded."

In opening the conference Governor Marland said: "Conservation seems to have really taken hold in all our states." He recounted the speeches delivered at the American Petroleum Institute at Los Angeles and at the Independent Petroleum Association of America in Dallas last month. That, he said, was taking the message to the oil industry.

A survey of the country showed there is no physical waste of oil or gas in any state except in California, where there is gas waste in the Kettleman Hills field.

"Our labors have been very successful," he said. "I hope we will be able to pursue with diligence our work until the next meeting. At any rate, let's hold what we have gained.

"If we continue to make progress there is no reason to be afraid of federal control. There will be no excuse for congress to attempt to do what we are already doing."

Present as a representative of Governor Frank Merriam of California was Neal Anderson of Los Angeles, long a leader in conservation and proration work in the West Coast fields. Mr. Anderson said the gas waste in the Kettleman Hills field would be remedied by the producers by the first of the year. Seventy million barrels of crude have been withdrawn from storage in California in the past two years, he said.

At the next session of the California legislature oil and gas measures will be considered, he continued, and expressed a belief a bill approving the compact would be among them.

Michigan has already started considering oil legislation, although the state legislature will not convene until January, 1937, Henry Hunt, secretary of the Michigan Oil Producers Association, told the commission. An oil and gas law, modeled after the laws of Oklahoma, Kansas and Texas has been prepared. The proposed bill approves the compact program and provides for entrance of Michigan into the commission.

Attending the conference were: Colonel Thompson, Jack Blalock and Elwood Fouts, attorneys, from Texas; Homer Hoch and Marvin Lee from Kansas; Hiram M. Dow, E. H. Wells, state geologist, and Frank Vesely, member of the state oil board, from New Mexico; William Bell from Illinois; H. C. Bretschneider from Colorado, and Governor Marland, Tom Anglin, W. J. Holloway, C. C. Brown and Art L. Walker from Oklahoma. Observers were: Neal Anderson of California, and Henry Hunt and E. F. Fry of Michigan.

NEAL H. ANDERSON

C. F. Roeser Says Price of $1.60 a Barrel Is Necessary

That crude oil producers are entitled to $1.60 or more per barrel for their product instead of the prevailing price of $1 and that from now on he will devote every effort to procuring this better price was a statement made Monday night by Charles F. Roeser, president of the Independent Petroleum Association of America at a dinner tendered in his honor in Tulsa by directors and members of the association from eastern Oklahoma. Mr. Roeser stated that according to figures of the United States government the index price of gasoline was down to a 50 per cent level of the 1926 prices, which had been set as a fair level by the government while all other commodities were within 80 or 85 per cent of the 1926 level. He declared a crude oil price of more than $1.60 per barrel is justified from a competitive or any other standpoint and that such a price is necessary to prevent great waste of petroleum resources through the abandonment of many pumping wells which he said would be forced out of the picture in less than two years under existing prices.

Mr. Roeser said the Independent Petroleum Association of America would work throughout the country to have the forthcoming session of congress limit imports of crude oil to a fair percentage of domestic consumption, and to make the Connally Act a permanent piece of federal legislation. He said imports now are running about 50,000 bbls. a day above what they should be in relation to domestic production and that withdrawals of crude from storage had been about 150,000 bbls. a day more than what they should have been while producers were restricting their output in this country. Had it not been for this 200,000 bbls. daily of supply from these sources, he said producers here would have been receiving better prices for crude oil.

In answer to an argument advanced that higher crude oil prices would result in overproduction Mr. Roeser said the logical thing for producers to do when a new field would be discovered would be to get around a table and decide upon a conservative drilling program for the development of the new area. He pointed out the petroleum industry had never asked for a government subsidy or process taxes but, instead, was paying more taxes than any other industry in the country and is entitled to federal and state cooperation in stabilizing the business. As an example he said the oil business in Texas is paying 58 per cent of all the taxes collected in that state from all sources.

Tax on Diesel Fuel Offers More Problems Than Gasoline Tax

By W. H. BUTLER and G. H. FREYERMUTH
Standard Oil Co. of New Jersey

In its simplest rudiments the taxation problem on Diesel fuel used for road transport is immeasurably more complicated than that of the taxation of gasoline. To be strictly correct, it should be said that the problem is not that of taxation, but of developing means to prevent evasion of any tax applied. The evasion problem in gasoline taxation is well known. Yet it is probably safe to say that the evasion problem in gasoline taxation is of simplicity itself as compared to the parallel problem in Diesel fuel, if similar methods of tax collection are attempted. The accompanying graph is interesting as showing the annual sales of Diesel engines in comparison with the production of automobiles.

The following, as it now appears, are the major problems involved:

1. Defining Diesel Fuel—If this is attempted by specification, the range, if made narrow, will permit the consumer readily to use another product with equal satisfaction. If made too broad, taxation will follow on a bulk of fuels covering nearly every field of domestic and industrial use, in order to reach an exceedingly small percentage eventually finding its way to use in road transport.

2. Widespread Use of Diesel Fuel Other Than on Highways—Even if it were possible to define Diesel fuel adequately and easily, there still remains the fact that only a very small percentage of Diesel fuel, today and for the next few years, is or will be used on the highways. If a tax were placed on Diesel fuel as a general classification, this would discriminate against industrial users in favor of other forms of fuel, and place a tax burden on uses for which, in most cases, the taxation was never intended. If exceptions or refunding arrangements were attempted, evasion of the tax for road use would become exceedingly simple.

3. Segregation of Diesel Fuel From Other Fuel Products—The difficulty of segregating Diesel fuel from other important fuel products and uses has already been mentioned. This is not only a question of definition of Diesel fuel, even if such could be defined, but most of such fuel could be and would be used for a variety of other purposes. It is practically an impossibility for the refiner or bulk jobber to determine the ultimate use to which the fuel marketed is put.

4. Multiplicity of Fuel Outlets—In the case of gasoline the enormous collection problem involved in the multiplicity of retail outlets for the product is overcome by tax collection at the point of manufacture or of bulk sales. Consideration of the differences between characteristics and marketing of gasoline and Diesel fuel indicates, however, that application of Diesel fuel tax at the point of fuel manufacture would be impractical. It would seem necessary, therefore, to transfer the point of tax collection for Diesel fuels to the small jobber or to the ultimate retail outlet. Such a procedure would be difficult enough if such outlets were solely for the purpose of marketing Diesel fuel for road transport operations. As a matter of fact, though, such outlets for fuel which can be used as Diesel fuel are today engaged in jobbing and retailing fuel for a variety of other purposes having nothing whatever to do with highway transportation.

The multiplicity of such individual outlets for fuel oil should not be underestimated. The growth of the range oil burner, the domestic oil burner, and small heating applications has brought practically every coal dealer, lumber dealer, hardware store and many other retail merchandising businesses into the picture as fuel oil outlets. These people are serviced by a great number of small individual jobbers spread throughout the country, who in turn obtain their products from any of a number of major suppliers.

5. Vital Economic Significance—It has already been attempted to make clear that for the period of the next few years at least, it is unlikely that the volume of Diesel fuel used on the highways of this country will become of significant importance. Yet it has been proposed, in order to regain gasoline tax revenue lost through this outlet, that a general tax be placed on all fuel products utilizable as Diesel fuel. It is impossible to underestimate the tremendous economic significance of a move such as this. The bulk of fuel oils sold in this country today, which could be classified also as Diesel fuels, are being used in industry in direct competition with other established forms of energy. This market represents a major and important market to the petroleum industry, and in supplying this market prices of the petroleum products compete on even terms with competitive forms of energy. This has maintained the prices of these products at a level based not primarily on convenience or utility of these fuels, but on equivalent costs of accomplishing the same end with coal, with manufactured gas, with electricity or with other fuel sources. The resultant margin of profit to the petroleum industry has been necessarily restricted, and the price schedules in this range influence, to no small degree, price schedules on the remaining petroleum products. The price of gasoline, excluding tax, has steadily decreased over the last several years, despite major improvements in service and improvements in quality of the product produced. It has been possible to maintain these low schedules of price of gasoline only because of outlets being developed for other products associated with the production of gasoline. Any factor tending to restrict the market for fuel oils must inevitably reduce the net realization to the refiner and compel a general increase in the price of other products. Any general tax basis on fuel classifications affecting industrial fuel oils and domestic burner oils would seriously affect the market for these products.

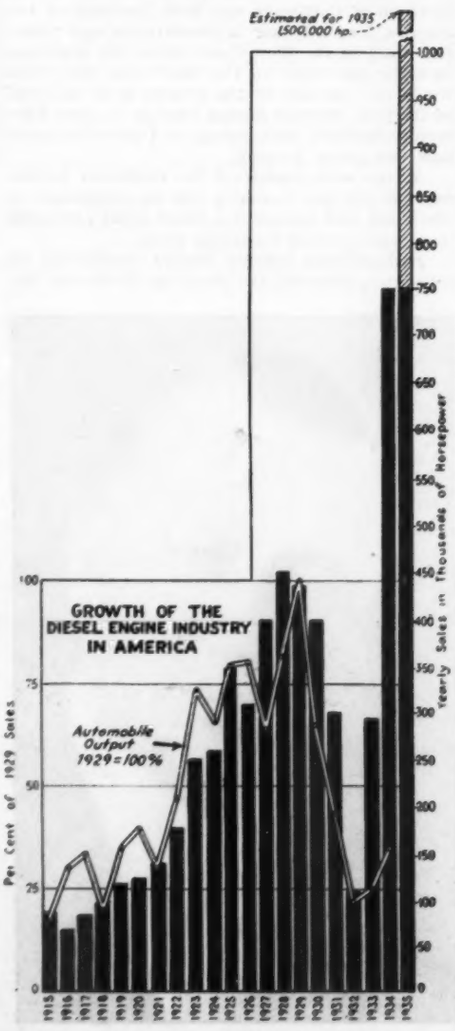


Fig. 1—Sale of Diesels since 1915, compared with automobile output

Over Seven Billion Feet Stored in Bow Island Gas Field

LETHBRIDGE, Alberta, Dec. 14.—A statement of P. D. Mellon of Calgary, chief engineer of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary, shows that since repressuring of the exhausted Bow Island gas field was commenced five years ago, 7,368,952,000 feet of waste gas from Turner Valley have been pumped into the old field whose pressure is now double what it was in 1930.

Repressuring of the Bow Island Field commenced on August 4, 1930. At that time there was 248 pounds rock pressure and about 9,000,000,000 feet of gas in the field which could not be withdrawn for consumption because of low pressure and water encroachment. On July 31, 1935, a reading of the meters showed over 7,000,000,000 feet of gas had been pumped into the sands and the rock pressure had increased to 496 pounds, exactly double the pressure when the compressors were started.

The company plans to pump gas into the field as long as a supply from Turner Valley is available. When the Bow Island Field was first drilled in 1912 there was in the sands approximately 46,000,000,000 feet of gas and during the period that gas was withdrawn, approximately 36,000,000,000 feet were piped to Calgary and Lethbridge. With an estimated total reserve of around 17,000,000,000 feet, the field is still about 29,000,000,000 feet short of its original volume.

New Colorado Lease Policy to Stimulate Wildcatting

DENVER, Colo., Dec. 16.—The adoption of a new policy early in the current year by the State Land Board in regard to the leasing of school land for oil and gas purposes has resulted in a large increase in acreage under lease in Colorado.

The board, to encourage development, adopted a more liberal lease form, under which applications will be received up to a maximum of 2,560 acres within the exterior limits of four adjoining counties without the reservation of any acreage by the state. A fee of 11 cents an acre, payable before application is received, is required. The leases run for 10 years and do not provide for a specific date in which drilling is to begin. Rentals are on the basis of a minimum of 25 cents an acre for the first five years and 50 cents an acre for the second five years. The royalty is placed at 12½ per cent. When a discovery is made the lessee automatically gets an extension as long as the wells produce commercially. It provides for offsets 660 feet back of the line.

Under the new form the number of applications has increased. There were 508,906 acres of state land under lease on December 10, 1935, as against 393,828 acres on June 30, 1934. Rentals per year increased during the period from $30,043 to $72,080. The gains in acreage were 29.2 per cent and annual rentals 129.1 for the period. It is estimated that between 4,000,000 and 5,000,000 acres are under lease in eastern Colorado, mostly to major companies, and the new policy of the land board has enabled a number of the companies to fill in their blocks. The result is wildcatting in eastern Colorado probably will go ahead on a larger scale next year than otherwise would have been likely.

Merry Christmas

» » Every member of this organization extends to You Christmas Greetings and best wishes for a Happy and Prosperous New Year

★

THE CONTINENTAL SUPPLY COMPANY

DALLAS · · · TEXAS

Natural Gas News

West Virginia Gas Operations Featured by Outside Test

PITTSBURGH, Pa., Dec. 16.—One of the most interesting gas wells of the week in West Virginia was an outside test in the Warren district, Upshur County. Columbian Carbon Co. completed No. 1 on the I. M. Bennett farm in the Benson sand at 4,700 feet. It gauges 500,000 feet a day.

Several fair sized gas wells were completed in West Virginia. In Boone County, Pure Oil Co. completed No. 76 Federal Coal Co. in Sherman district at total depth of 3,053 feet. Here the Weir sand was at 2,850-3,042 feet with gas showing at 2,919-20, 2,937-38 and 3,014-15 feet. The natural volume is 95,000 feet a day. In Washington district, Owens Illinois Glass Co. drilled No. 14 Little Coal Land Co. lease to 2,375 feet, the Berea sand, and as it showed only 19,000 feet of gas it will be abandoned.

In Cabell County, McComas district, H. H. Baker Gas Co. completed No. 4 Augusta Beckett at a total depth of 1,358 feet. The Big Lime was at 1,123-1,293 feet; the Big Injun sand at 1,351 feet until gas stopped the drilling at 1,358 feet. The volume is about 2,500,000 feet a day. In this district, Pridemore and Walden Gas Co. completed a test on their Augusta Beckett lease at 1,315 feet. Here, the Big Lime was at 1,084-1,244 feet and top of the Big Injun at 1,300 feet with about 2,331,-000 feet of gas a day showing from that depth to the bottom. In the same district, United Fuel Gas Co. drilled deeper No. 4,573 Walter Ray from 1,336 feet to the Berea sand 1,883-1,901 feet. There is about 134,400 feet of gas at 1,883-90 feet.

In Calhoun County, K. M. Hunt and others completed a test on the Vietta Brannon farm in Washington district at 2,143 feet, the Big Injun sand, the top of which was at 2,070 feet. It gauges about 33,600 feet a day.

In Gilmer County, Coleman and Hamilton completed a second test on the A. Gainer farm in DeKalb district in the Maxon sand at 1,731 feet. The formation was struck at 1,723 feet with gas showing at 1,725 feet which gauges over 1,500,000 feet a day.

In Kanawha County, Godfrey L. Cabot, Inc. drilled No. 49 A. D. Huntington in Cabin Creek district and found it dry. A short log follows: Big Lime, 2,631-2,816 feet; Big Injun, 2,816-95 feet; Weir, 2,895-3,031 feet; Berea, 3,265-76 feet; show of gas 2,800 feet; total depth 3,324 feet.

In Raleigh County, Godfrey L. Cabot, Inc., abandoned No. 9 Beaver Coal Co. in Slab Fork district as dry. Total depth was 3,603 feet and the formation as follows: Big Lime, 2,400-2,934 feet; Big Injun, 2,945-90 feet; slate and shells, 3,260-3,603 feet. There was a sand at 2,155-2,240 feet with some gas at 2,220 feet. It was not shot.

In Roane County, United Fuel Gas Co. completed No. 4,572 J. D. Looney in Smithfield district at 2,003 feet. There were two showings of gas, one in Big Lime sand at 1,842-47 feet and the other in the Injun sand at 1,932-40 feet. The gauge is 324,000 feet a day. In Spencer district, H. H. Stants lost the tools in the hole on the L. E. Bolte farm at 1,700 feet in the Salt sand and abandoned it.

Strathroy Gas Franchise

STRATHROY, Ontario, Dec. 14.—Ratepayers of Strathroy at the municipal elections approved the granting of a natural gas franchise to the Union Gas Co. of Canada, Ltd.

Turner Valley Quotas

CHATHAM, Ontario, Dec. 14.—Following representations to the Alberta, Canada, provincial government by independent oil operators, the government has decided to suspend the new gas quotas for the Turner Valley field, recently announced on the basis of the annual flow and pressure tests made by the lands and mines department in August. The quotas previously in force will be continued. The new quota restricted the aggregate gas production of the field to 276,214,000 feet a day while the old quota provided for approximately 250,000,000 feet. The increase in the new quota was mainly due to larger allowances to some of the newer wells in the area.

"Detroit Plan" Effective Block to Municipal Ownership Plan

One of the most serious threats of municipal ownership and operation of a major public utility in recent years, growing out of differences between the city of Detroit and the Detroit City Gas Co. was removed by the agreement recently entered into, and the settlement brings a working basis for the future in which the interests of the gas users of Detroit and the stockholders of the company are believed to be, practically as well as theoretically, identical.

The "Detroit plan," embodying this working agreement between the municipality and the company, may prove epochal in utility and municipal relationships. It would seem to remove the chief incentive for support of the municipal ownership idea, by giving the consumer a certain and definite interest in the profitable operation of the company. The "plan" was worked out by Frank P. Fisher, consulting engineer employed by the city of Detroit, and was accepted for the gas company by William G. Woolfolk, its president. Engineer Fisher was for many years an Oklahoman, being identified in an executive capacity with the Doherty interests having headquarters at Bartlesville.

Employed by the city of Detroit last March to take over a rate controversy already in court, and appearing to have the city headed definitely in the direction of municipal gas utility operation, Mr. Fisher has labored to bring about, as a factor in composing the differences involved, a commitment for a full supply of natural gas from the Texas Panhandle to replace manufactured gas in Detroit, and estimates the potential ultimate use in that city, 1,200 miles from the source of supply, at as much as 230,000,000 feet per day.

Under the plan agreed upon, rates will be reduced, but revenue from gas sales will be vastly increased, and excess earnings of the gas company will be returned in large part to domestic gas consumers in the form of cash dividends distributed at the end of each fiscal year in proportion to the quantity of gas used by each.

John W. Smith, president of the Detroit city council, characterized the agreement as an "historic and unprecedented victory for the people." As an immediate effect of the understanding the council agreed to take immediate steps to remove from the ballot for the election November 5 the proposal to establish a municipally-owned and operated gas utility, Council President Smith declaring the new plan to permit consumers to share in the company's earnings as "the nearest approach to the benefits of municipal ownership that is possible under the private ownership of a utility." The agreement carries also withdrawal of the city's demand for a payment of rental by the gas company for the use of the streets, Mr. Fisher pointing out that any such expense would have to be borne chiefly by the consumers in reduced dividends from operation.

The plan calls for a promotional rate, the lowest that will produce the necessary revenue. Such rates are designed to increase the volume of business, and attract new industries, with benefits of this policy accruing to all types of consumers in still lower rates and to the company in increased business.

Specifically, the plan worked out by the engineer and the company calls for a base earning for the company of $3,850,000 per year, the minimum amount required to maintain its operations on a sound basis, Mr. Fisher estimated. This base earning, while not specifically related to the company's property valuation, and adopted only as a starting point to put the plan into effect, is actually 7 per cent on $55,000,000, and represents a substantial concession on the part of the company, whose property account, as reflected on its books, plus working capital, is approximately $68,700,000.

The plan provides that net revenue above the base earning shall be divided between the domestic consumers and the stockholders of the company, the consumers' share to be distributed after the close of each fiscal year as cash dividends, prorated according to the amount of gas used. The first $550,000 earned in excess of the base earning will be split between consumers and stockholders on a 50-50 basis, all additional profits to be divided on a basis of 75 per cent to the consumers and 25 per cent to the stockholders. Pointing out that in normal times the company has earned as high as $6,000,000 a year, or $2,150,000 more than the base earning now established, and that the company's business will increase substantially when it switches to natural gas, Mr. Fisher states that consumers are assured millions in cash dividends.

The gas company will not await the coming of

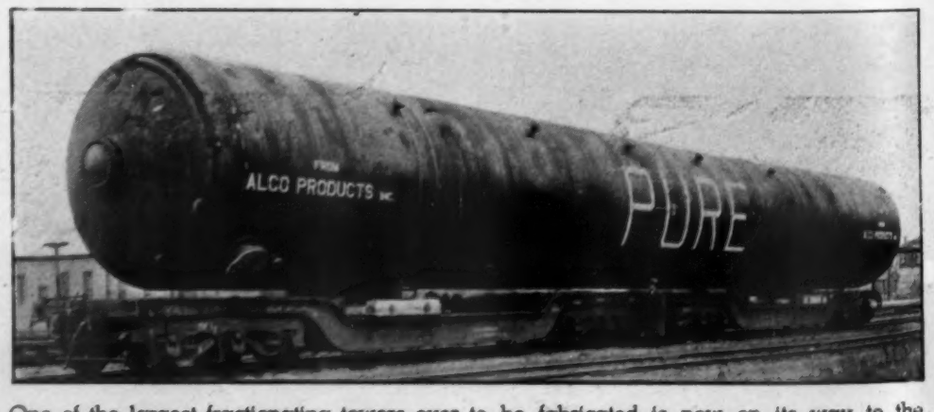
Refinery Work

Polymerization Unit

The Sinclair Refining Co. has completed plans for the installation of a polymerization unit at its East Chicago, Ind., refinery. The plant will operate with cracked gases totaling approximately 4,500,000 feet daily. The polymerization unit will be the catalytic type developed by the Universal Oil Products Co.

New Refinery Office

COUTTS, Alberta, Dec. 14.—Maple Leaf Petroleums, Ltd. have completed foundations for their new $10,000 refinery office.



One of the largest fractionating towers ever to be fabricated is now on its way to the Muskogee, Okla., refinery of the Pure Oil Company

natural gas to put the plan into effect, but makes it retroactive to last April 8, when increased rates were put into effect for manufactured gas, under which arrangement consumers will be entitled to dividends on the current fiscal year's operation provided the earnings exceed the base figure of $3,800,000.

Concerning the accepted plan, Mr. Fisher says: "The company has a continuous incentive to increase sales volume and economize in operation. The city secures for consumers the lowest possible net rate, and eliminates forever the recurrence of expensive litigation. Both the stockholders and the consumers have a permanent interest in the success of Detroit's gas service." Council President Smith says: "It means that Detroit has achieved in the last few months more than have all the hearings before regulatory bodies and courts in the last quarter century."

Ontario Gas Franchise

PETROLIA, Ontario, Dec. 14.—The Enniskillen Township council has granted a 25-year renewal of the franchise, originally granted United Fuel Supply Co. and now held by Union Gas Co. to maintain and operate gas lines in the township.

Dominion Natural Gas Co. of Buffalo, N. Y., is asking the right to lay a transmission line across the industrial area of St. Thomas to supply consumers in the Yarmouth Heights suburban district. The company recently completed an extension across the north end of the city to supply the North Balaclava and Lynhurst suburban areas.

Northern Natural Gas

Northern Natural Gas Co. has declared and paid an initial dividend of $6 a share on common stock, all of which is owned, except for directors' qualifying shares, by North American Light & Power Co., United Light & Power Co. and the Lone Star Gas Corp. The total amount paid is understood to have been $1,218,000. Of this $426,300 went each to United Light & Power and North American and $365,400 to Lone Star Gas on the basis of ownership at the rate of 35 per cent for each of the first named companies and 30 per cent for the last named.

Pipe Line Progress

Ready to lower pipe into ditch on North Central Gas Company gas line in Wyoming

Size of Gas Line to Lansing to Be Increased to 10-inch

MUSKEGON, Mich., Dec. 16.—Consumers Power Co. last week filed an amended application seeking to increase the size of its proposed 70-mile natural gas pipe line from the Millbrook-Hinton-Belvidere Townships pool to Lansing from 8⅝ to 10 inches. Cost of the proposed line, approved two weeks ago by the Michigan Public Utilities Commission, would be increased from $400,000 to $507,000, it was estimated.

Farmers owning land in the field organized last week to block the proposed line by refusing the Consumers company a right of way and protested to Governor Fitzgerald against the utilities commission's action, objecting to the setup under which they would be required to sell gas to Petroleum Transportation Co., a gathering line company, at 12 cents per 1,000 feet, to get a market for their output in Lansing.

The Transportation company was reported ready to counter with a proposal to sell stock in the company to the farmers.

Petitions of the Aetna Pipe Line Co. for the right to transort natural gas from Winfield and Aetna Township wells in Montcalm and Mecosta Counties to supply the village of Morley through the Morley Natural Gas Co., a new distributing concern, will be heard before the Michigan Public Utilities Commission today, Thursday, December 19.

The Alma city commission last week voted to submit a $100,000 bond issue to the voters to build a municipal natural gas distributing system. The commission recently invited the Midwest Oil Refinery Co. already using gas in its Alma plant piped from the Crystal field to submit a bid to supply gas for domestic and commercial uses in the city.

To Add 35-Mile Spur Branch to Michigan-Toledo Line

MUSKEGON, Mich., Dec. 16.—The Michigan-Toledo Pipe Line Co., which has completed more than 100 miles of a 140-mile oil pipe line from the Crystal pool in Montcalm County, central Michigan, to Toledo, last week announced plans to proceed immediately with a 35-mile spur east of Dundee to Trenton, Mich., to serve the White Star refinery there, branch of Socony-Vacuum Oil Co., with Michigan crude.

The main line to Toledo is expected to be ready for operation the latter part of December. The line will have a daily capacity of 25,000 bbls. Franklin Tool Co., contractor, is laying from 2 to 4 miles of line daily. The line will be operated by a company formed on a 50-50 ownership basis by Simrall Pipe Line Co., of Mount Pleasant, Mich., and Standard Oil Co. of Ohio.

Pipe Line Contract

SARNIA, Ontario, Dec. 14.—George A. Wilson, president of the Sarnia Oil & Gas Co., has announced that a contract has been signed with St. Clair Pipe Lines, Ltd., for the construction of a transmission line to Sarnia to supply natural gas from fields in Lambton County for commercial contracts. The line will be completed in January.

Natural Gasoline

Natural Gasoline Output Goes to New High in October

The output of natural gasoline continued to reach new high levels in 1935 according to the October report of the Bureau of Mines. The daily average for October was 4,842,000 gallons, the highest since December, 1931. The gain in output in recent months has resulted from a number of causes such as generally favorable prices, increased crude oil (and gas) production, and a virtual breakdown of curtailment in the Panhandle. Production in all the principal fields increased in October, the gains in the Panhandle, Kettleman Hills, and Oklahoma City fields being outstanding. Daily average production in the Panhandle was nearly 750,000 gallons daily, 100,000 gallons higher than in September, but considerably below the peak of November, 1934. Stocks of natural gasoline reflected the brisk demand and declined materially; the total on hand October 31 was 184,128,000 gallons compared with 215,586,000 gallons on hand at the beginning of the month.

Exports of natural gasoline declined in October but deliveries to jobbers, retailers, and refinery-owned bulk plants showed a material increase. The movement of natural gasoline to refineries for the manufacture of the more volatile winter gasolines again increased and probably reached its peak for the year.

Vapor pressures were generally higher for the same reason that deliveries increased, namely, the desire to produce a more volatile gasoline for cold weather consumption.

District Gas Convention

LETHBRIDGE, Alberta, Dec. 14.—Some 30 members of the field force of Canadian Western Natural Gas, Light, Heat & Power Co. in southern Alberta, attended the annual convention here on December 6, under the chairmanship of R. S. Winter, district superintendent. A number of papers were read and discussed, P. D. Mellon, chief engineer, and Harold Timmins, of the Calgary office, participating in the discussions. At the annual banquet the same evening Mr. Mellon presented Carl Edlund of Macleod with the medal of efficiency and a cheque for winning the competition open to station operators.

Construct Absorption Plant

CALGARY, Alberta, Dec. 16.—Construction has commenced of a $300,000 gasoline absorption plant for the British-American Oil Co. in South Turner Valley, the site being in LSD 4, section 22-18-2w5, immediately east of Highwood-Sarcee No. 2 well. The plant will be in operation by next spring and will take wet gas from wells in the immediate area. The process utilized will involve a number of innovations, and the gasoline produced will not require blending with crude oil to make a satisfactory motor fuel.

Sydney, Australia, May Have Gas Field Under Harbor

Sydney, Australia, may soon have a supply of natural gas piped from apparently inexhaustible supplies under the floor of the harbor, more than a mile below the surface of the water, according to a dispatch to the New York Times.

Examination by government scientists indicates that the harbor floor is a great inverted saucer of shale and sandstone nearly a mile thick, which is acting as a natural gasometer. With the realization of the present plans the Natural Gas & Oil Corp. will erect an enormous gas holder at the top of its bore, run a pipe line through the works of one or the other of the municipal gas companies, install a meter and collect dividends.

At present the bore is 4,000 feet below the harbor bed. At that stage a rush of gas caused the investigators to proceed more cautiously. The corporation means to drill down at least 2,000 feet further.

From Balmain to Cremorne Point extends the old tunnel of the Balmain colliery, half a mile below sea level. It was from this point that the corporation started to bore for gas two years ago, when two men were killed in an explosion. After the disaster the authorities insisted that future boring should be done from the surface.

If gas is found in quantities indicated by preliminary work it will mean a new era for Sydney. As a really extensive gas chamber could be tapped from many points, other companies are certain to try their luck.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by

THE PETROLEUM PUBLISHING COMPANY

114-16 West Second Street, Tulsa, Oklahoma

P. C. LAUINGER
President

A. M. ROWLEY
Editor

W. T. ANDERSON
Managing Editor

JAMES McINTYRE
Consulting Editor

C. O. WILLSON
Refinery Editor

W. T. ZIEGENHAIN
Engineering Editor

L. G. E. BIGNELL
Prod. Engr. Editor

Established 1910 by
PATRICK C. BOYLE

E. KLAPPENBACH
Advertising Manager

C. K. FRANCIS, Ph.D.
Technical Editor

T. F. SMILEY
Associate Editor

T. H. NELSON
Metallurgical Editor

M. F. BALDWIN
Circulation Manager

S. H. ROURKE
Business Manager

Branch Editorial Offices

Canada — Victor Lauriston
Denver — Tolbert R. Ingram
Fort Worth — L. E. Bredberg
San Antonio — George Weber
Houston — Neil Williams
Los Angeles — L. P. Stockman
Pittsburgh
Michigan — Paul A. Elliott
Oil City — Robert C. Conine
New York City — C. O. Willson
Chicago
Minden, La. — J. R. Crumpton
Toledo — George A. Whitney
Washington — Hugh D. Mallon

Branch Advertising Offices

New York City — C. L. Cain
Chicago — C. R. Farmer
Cleveland — Howard Markt
Houston — Wayne Rives
Los Angeles — J. H. Tinkham

MEMBER, AUDIT BUREAU OF CIRCULATIONS

Stock Figures Tell

Secretary of the Interior Ickes takes advantage of sending the annual report of his department to the president to once more claim credit for saving the oil industry from the "dire distress" in which he says his administration found it.

To settle this contention once for all take the total crude stocks on October 31, 1933, the first month after the federal oil administration took charge of the industry. Those stocks stood at 356,885,000 barrels.

When, following the Supreme Court decision on the NRA, the federal oil administration relinquished control on May 31, 1935, crude stocks stood at 348,103,000 barrels, a decline of but 8,000,000 barrels.

The Bureau of Mines report on crude stocks on October 31, 1935, was down to 317,155,000 barrels, a decrease of 31,000,000 barrels in the five months the industry was again in control of its own business.

Stocks are the resultant fact of the various operations in the industry and the best measure of its condition. It is very clear from these comparisons that the industry made vastly more progress toward stabilization since it emerged from under federal control than it did in the long period under Mr. Ickes.

Furthermore, production has been increasing in line with consumption and although the price remains the same producers are getting more money because of their larger output, and it is agreed the industry is today in better condition than it has been for years.

It has made more progress in the past five months than it did in all the time it was being "saved" by Mr. Ickes. The conclusive proof presented in the figures on crude stocks is taken from the government's own report as given out by the secretary himself.

Since the industry is doing such a good job when freed from the handicap of federal interference it should be a sufficient answer to any programs for federal control legislation in the next session of congress.

Oil Progress Abroad

Next week's issue of The Oil and Gas Journal will contain the annual review of foreign oil developments, together with the first comprehensive survey of refineries and cracking units in the various countries of the world. It will present also the announcements of the manufacturers of American oil industry equipment and supplies in the languages familiar in the leading oil producing and refining nations abroad so that those interested may have all the information they require without necessity for translation or interpretation. This feature of the Journal's foreign annual has been widely welcomed.

The review will offer in concise form the record of oil developments country by country, together with special articles of a technical or descriptive nature pertinent to such a review, covering the progress in engineering and manufacturing throughout the world.

The expansion of production and refining in foreign countries is increasingly interesting the American industry as the possible effects on the world market are being considered. The latest available facts and figures will be presented in this issue.

It is evident that the various peoples seeking means of rehabilitation after the prolonged world depression are sensing the potentialities of motorization in accelerating industry and business and broadening prosperity. This may momentarily be delayed in some countries through mistaken taxation policies but the outcome is inevitable. The demand for oil and petroleum products is bound to continue expanding. Oil activities abroad during present year show that the industry abroad is convinced of this and is preparing for it.

Oil News from Foreign Lands

ITALIAN COLONIES

According to a report of International Petroleum Trade the Italian colonies until this year were small importers of petroleum products. Although no data are available for this year it is assumed that the imports have increased substantially to Eritrea and Italian Somaliland due to war preparations. The products for these colonies for the most part are supplied by major oil companies distributing in Italy. The following report shows the average yearly imports by colonies (bbls.): Tripolitania, gasoline 49,997; kerosene, 22,088; gas and fuel oil, 21,395; lubricating oil, 6,237; other, 16,121. Cyrenaica, gasoline, 23,248; kerosene, 9,540; lubricating oil, 3,164; fuel oil, 8,478. Eritrea, gasoline, 2,312; kerosene, 3,418; lubricating oil, 1,659; fuel oil, 1,352. Italian Somaliland, gasoline, 12,317; kerosene, 12,214.

COLOMBIA-PERU

The Tropical Oil Co.'s production in Colombia for October averaged 52,106 bbls. daily, an increase of 500 bbls. daily over the September average but approximately 800 bbls. daily less than October, 1934. For the first 10 months of this year the crude oil production was approximately 2,800 bbls. daily more than the same period in 1934.

In Peru the production of International Petroleum Co., Ltd., in October was about the same as in September and October, 1934. For the 10 months the average daily production is running slightly ahead of last year. The Tropical company's production in Colombia and that of International in Peru are as follows (bbls.):

COLOMBIA

	1935	1934
October	1,622,372	1,646,293
October (daily)	52,367	53,106
September (daily)	51,856	54,254
First 10 months	15,010,228	14,152,898
First 10 months (daily)	49,375	46,555

PERU

October	1,307,946	1,303,554
October (daily)	42,192	42,050
September (daily)	42,530	41,997
First 10 months	12,387,445	11,723,886
First 10 months (daily)	40,748	38,565

The International Petroleum Co., Ltd., in its annual statement released last week for the year ending June 30, 1935, made the following statement regarding operations in Peru and those of Tropical, its subsidiary, in Colombia:

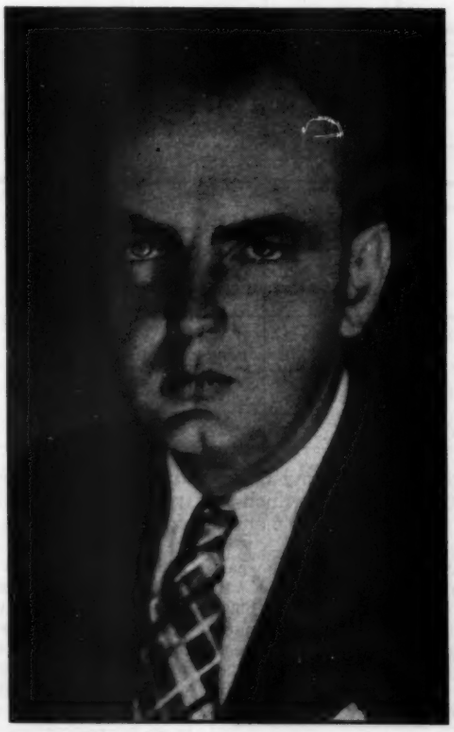
"The amount of crude oil produced from your fields during the year was 32,783,261 bbls.; the volume of natural gasoline produced by your gasoline absorption plants was 1,621,119 bbls., or an average total production of both products of 84,258 bbls. per day. The refineries at Talara, Peru, and Barrancabermeja, Colombia, processed during the year 7,563,091 bbls., or approximately 20,720 bbls. per day. The above figures establish an all time peak in the company's operations.

"The company's oil fields in both Peru and Colombia are extensive in area and lend themselves admirably to the system of unit operation, which is being fully utilized and permits recovery of the oil in the most economic and scientific manner known to the industry today. Repressuring and pressure maintenance are taken full advantage of and, after extraction of its gasoline content, some 22,219,000 feet of gas in Peru and some 22,400,000 feet in Colombia have been returned to the producing horizons daily during the year; the results have proved highly beneficial both by way of increased recoveries of crude and by way of increased reserves of fuel gas for the operation of producing properties and of the refineries. During the depression drilling programmes in both countries were restricted in accordance with the depressed condition prevailing in the world's oil industry, but these programs have during the past year been increased and corresponding additions made to the company's proven oil reserves.

"The crude oil and refined products which the company exported during the year were marketed in upwards of 20 countries situated in South and Central America, the West Indies, North America and Europe.

"During the period covered by this report the company supplied the needs of the Republics of Peru and Colombia for gasoline, refined oils, lubricants and fuel oil, these sales showing an increase in volume over the previous year of 15.97 per cent and 16.76 per cent respectively. In both countries the company owns the tank cars, bulk stations and other facilities necessary for the efficient distribution of its products.

✦ ✦ ✦



C. L. CROSS

C. L. Cross is technical supervisor of the Pierce Oil Co., S.A., refinery at Tampico, Mexico. In this capacity he has supervision over all designing and new construction work at the plant. He is a graduate of the University of Kansas. He joined the research and development department of Sinclair Refining Co. at Chicago in 1926, where he worked on pipe still design, atmospheric and vacuum, refrigeration, wax plants, centrifuge, lube oil plant design and general work. He was transferred to the Pierce plant at Tampico in 1932.

STANDARD

The foreign crude production of the Standard Oil Company (New Jersey) far exceeds that of its domestic subsidiaries, according to a report filed by the company with the Securities and Exchange Commission. The report shows that the company's production in United States in 1934 totaled 58,560,200 bbls. net with 7,805,200 acres under lease. In six foreign countries in which the company's subsidiaries operate, its net production was 86,723,900 bbls., or approximately 237,600 bbls. daily. This production and acreage in 1934 was divided as follows (bbls.):

	Production	Acreage
Venezuela	58,560,200	7,539,600
Colombia	15,590,600	1,319,300
Peru	14,130,100	411,300
Argentina	2,416,600	118,400
Mexico	9,812,500	1,314,700
Rumania	6,213,900	85,900

In addition to the above, the company participates in a large development in Iraq with its share amounting to approximately 16,000 bbls. daily. The company, with Socony Vacuum Oil Co., Inc., also has a large production in the Far East amounting, it is said, to approximately 40,000 bbls. daily. It has production in some of the smaller producing countries.

The company's refinery operations in foreign countries also exceed those in the United States, according to the report. The daily crude runs to stills of subsidiary companies by countries were as follows:

	Bbls. daily
Canada—	
Halifax, Novia Scotia	8,890
Montreal, Quebec	12,449
Sarnia, Ontario	17,082
Ioco, British Colombia	9,243
Europe—	
Frawley, Hants, England	9,669
Rouen, France	16,476
Teleajen, Rumania	18,745
Other countries—	
Tampico, Mexico	16,821
Aruba, D.W.I.	138,117
Talara, Peru	16,760
Campana, Argentina	6,662

With the Socony-Vacuum, under the name of the Standard Vacuum Oil Co., the company is part owner of a refinery operation in which approximately 35,000 bbls. of crude oil are refined daily. The company participates in smaller refinery operations in other countries.

SWEDEN

The Swedish minister of finance has appointed a committee of three members to study the desirability of establishing a state fuel monopoly in order to increase the revenues of the government according to a consular report to the United States. There are two types of monopoly under consideration. One type is similar to the existing Tobacco Monopoly which would include a complete monopoly over the imports as well as wholesale and retail trade. The other type would be a monopoly over imports only, thereby enabling the oil companies now established to continue their wholesale and retail activities. It is believed that an all-inclusive monopoly will be the type to be recommended as the government would not be in position to realize sufficient revenue to warrant the establishment of a monopoly over imports only. The all-inclusive monopoly, it is said, would require an investment of at least $38,000,000 on the part of the government to take over the existing distribution systems of the oil companies.

The general public, the automobile associations and the chambers of commerce, it is reported, are opposed to a fuel oil monopoly as they anticipate decided increases in prices for fuel oil under government supervision. These people and organizations refer to the drastic increases in the prices for tobacco when the State Tobacco Monopoly was created.

During 1933 and 1934 investigations were conducted by the Swedish government concerning the advisability of establishing a fuel oil monopoly. The question was dropped without having been submitted to a vote on the Swedish Roksdag and the matter was believed to have been definitely abandoned on account of public opposition.

West and North Texas

ORDOVICIAN TEST IN CRANE COUNTY STARTS NEW WORK

By
L. E. BREDBERG

FORT WORTH, Tex., Dec. 16.—Gulf Production Co. No. 1 Waddell, in section 4, Block B-27, Ordovician producer on the extreme west edge of Crane County, continues to hold the spotlight in West Texas news. Cable tools have been in use all week in cleaning out the caving hole which has filled 5,200 feet with oil, the oil increasing during the clean-out job. The plugged back, total depth is 6,317 feet. As soon as the hole is cleaned one or more shots will be given the Simpson sand and lime in an effort to make a good well out of the test. Gravity of the oil tests 33.5 degrees, but after the hole is cleaned and free oil is produced it is believed the gravity will be higher.

Humble Oil & Refining Co. has rigged up heavy rotary in section 11, Block B-27, about 4 miles to the southeast of the Waddell Ordovician producer, and will soon be ready to spud, while Shell Petroleum and others are making plans to drill in section 3, Block B-27, about 1½ miles southeast of the Gulf-Waddell well. This hole will first be drilled to test the regular Tubbs pay found around 4,200 feet, but will be prepared for deeper drilling if a satisfactory well is not made at the shallower depth.

John I. Moore, Loffland Brothers and others were prepared to deepen their No. 1 L. S. McDowell, Ordovician test in section 22, Block 34, Township 2s, T.&P. Survey, Glasscock County, but fire broke out and destroyed some equipment and burned the tanks of fuel oil and stored oil, retarding the new work. However, the rig will soon be ready for further drilling, which is expected to get under way this week. This test has been shut down for three months, making around 150 bbls. of oil about six weeks ago when it was opened for a test. Total depth is 10,115 feet, the well producing from the Ordovician. It topped the lime at 9,471 feet, logged a show of oil and gas at 9,484-9,520 feet, struck an increase at 9,594-9,600 feet and 9,633-55 feet and shut down at 10,115 feet, the hole filling with oil and making the flow when opened. This was the first Ordovician test in West Texas to make a flow from the Ordovician, producing section of that formation, consequently it created much interest. Bottom of the hole is believed to be in the lower Pennsylvanian, either the Strawn or Bend horizon.

The Schleicher County Ordovician test started by W. C. Proctor, Wesner and Kimberlin in section 4, Block V-28, on the Judkins and Spencer lands, is to be carried down under the name of Cecil B. Rains, drilling contractor of Midland, who has been associated with Mr. Farley in that city.

Buffalo, N. Y., parties have purchased heavy duty rotary which will be moved from Hobbs, New Mexico, to drill the test to 6,500 feet. The location is on a 2,547-acre block, in which Proctor, Wesner and Kimberlin each holds a 320-acre lease nearby. Total depth of the hole is now 2,205 feet, standing shut down there for the past several months.

Odessa Discovery

Barnsdall Oil Co., York and Harper No. 1 Foster, located in section 13, Block 43, Township 2s, T.&P. Survey, about 3 miles northwest of Odessa in Ector County, which opens a new pool or will prove a southeast extension to the lone Johnson producer in section 47, Block 43, 1n, struck sulphur water at 4,335-42 feet and is to plug back to shut off the water and produce from the pay logged between 4,090-4,136 feet. It has been swabbing around 50 bbls. per day from this pay and is sure of making a commercial producer after plugging back and given the customary shot for wells in the Ector County pools.

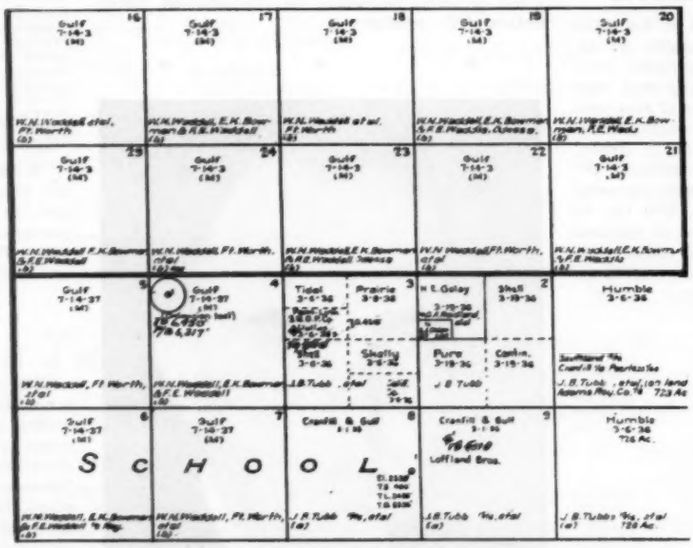
Ector Extension

Sun Oil Co. and Atlantic Oil Producing Co. No. 1-B Holt, in section 6, Block 43, Township 1n, T.&P. Survey, 2 miles north of the Cowden pool and 1 mile northeast of a small outpost producer, on the extreme north edge of Ector County, is still incomplete, shut down at 4,500 feet where it has been flowing from 50 to 90 bbls. of fluid per day, 10 per cent water. It was shot with 110 quarts of nitroglycerin at 4,445-80 feet. Tubing is being run preparatory to completing. The pay is either a deeper formation or is deeper in the lime section than in the well producing to the southwest. It is much deeper than in the wells in the Cowden pool to the south.

Outpost Failure

Sun Oil Co. No. 1 Crow, in the SW quarter of section 23, Block B-5, about 3½ miles southeast of the Brown and Altman area and 3 miles northeast of the Emperor-Halley producer, has been abandoned at a total depth of 3,578 feet limiting this Winkler County area on the east. The same company's No. 1 Walton, in the SE quarter of section 8, Block B-3, has been completed for an initial production of 248 bbls. per day after plugging back from 3,454 to 3,403 feet and shooting. This is a mile west extension to the Keystone-Walton area northeast of Kermit. Magnolia Petroleum Co. has location for its No. 1 State-Walton in the SE quarter of section 7, Block B-3, about 1 mile farther to the west, which will be an interesting location for the area in as much as it will either extend the field still farther or limit it on the west.

The Gulf Production Co. has staked location for a wildcat test in the SE quarter of section 9, Block B-11, about 3¾ miles due east of the Emporer-Halley production in Winkler County, and 2 miles northeast of a small producer in the SE quarter of section 18, same block and survey. Wilson Keyes and others have staked location for a test on lands held by the Car-Tex Oil & Gas Co., 330 feet from the north and 2,310 feet from the east lines of section 25, Block 26. This is an interesting location due to its falling 1 mile north of the nearest producer in the Kermit area and on a line with the Howe area. It may prove one of the connecting producing links between the Howe and Kermit or Brown and Altman areas.



Gulf Production Company Ordovician test on the Waddell ranch in western Crane County which has producing possibilities from the Simpson, member of the Ordovician

Upton Semiwildcat

Texas Co. has moved in material for a semiwildcat test on the E. Hughes ranch in section 4, G.C.&S.F. Survey in southeastern Crane County, about 2 miles from the Hughes production in that area.

More Wildcats for Jones

Bob Elmore of Fort Worth has spudded in a wildcat test on the Caton farm in section 10, D.D.&A. Lands, 3 miles west of Avoca in northwest Jones County and the Moutray Oil Co. is drilling on its Frank Olney test in section 4, G. Martinez Survey No. 195, 1½ miles north of Hawley.

Humphrey No. 1 Dorsey, in the SW cor. section 18, M. Bueno Survey, nearly three-quarters of a mile southeast of the Hawley pool, has been completed in the Hawley sand at 2,060 feet, looking good for at least 1,500 bbls. per day.

Peckham and Danciger Oil & Refining Co. No. 1 City of Stamford, located about 1,800 miles northeast of production in the Lueders pool in northeast Jones County, is extending that pool and is also producing from a higher pay than other wells are producing in the pool. It topped the sand at 1,815 feet and filled 650 feet with oil in 14 hours after shutting down 1 foot in the sand. Casing was set and test is to be made. The regular pay in this area is found below 2,000 feet, this new well adding a second and shallower pay for the pool. It is located in the NE quarter of section 207, B.B.B.&C. Survey.

Fisher Deep Test

Forrest Development Corp. of Pittsburgh, which is drilling a deep test in Kimble County, is also preparing to drill a 4,200-foot test on a large block of between 25,000 and 30,000 acres located west of Rotan in Fisher County. Location is in the SE quarter of section 108, Block 2, H.&T.C. Survey on the A. M. Dry lands. The block has been extensively core drilled.

There were 23 locations staked in the West Texas district this week and 22 wells completed, six of which were wildcat or semiwildcat failures. Brewster, Reagan, McCulloch, Jones, Winkler and Howard County shared in disappointments.

J. L. Cowley and others of Wichita Falls have a drilling block centering in the SW quarter of section 24,

Block 2, S.P.R.R. Survey, 5 miles southwest of Hawley in Jones County, on which they will drill a 2,600-foot test, to be spudded by January 15, 1936.

Ranger and Wichita Falls

Ernest Lloyd and others No. 1 P. F. Dalton and others which came in last week in the west half of Palo Pinto County, when it logged a saturated oil sand at 1,364-76 feet, has been completed for a 25-bbl. well following a 15-quart shot in the sand. Location is in the Thomas Harris Survey and opens a new shallow producing area for the county.

New Cooke County Pool

J. H. Martin has opened a shallow producing pool 2 miles south and 1 mile east of Gainesville in Cooke County, but as yet the well has not been gauged. It is estimated good for 50 bbls. per day of 38 gravity oil from sand logged at 1,605-15 feet. The owner has 300 acres surrounding the well and acreage has been changing hands in the area since the well started showing for a producer. Three locations have already been staked for tests on offset acreage. The well is located 2 miles northwest of the Lloyd Oil Corp.'s wells which are producing a 32 gravity black oil from sand logged at 1,320-25 feet.

Young County Wildcat

Robert Oil Corp. No. 1 J. R. McCarroll, located in the northeast corner of the William Fullerton Survey, 1½ miles west of the Rathke Oil Co.'s new deep pool on the Wadley and Jeffery lands in Young County, promises the opening of a pool. The test logged lime pay at 3,685-89 feet and made several heads. Six and five-eighths inch casing was set on top of the pay and plug is now being drilled preparatory to testing.

Jackson and Green No. 1 H. H. Ramsey, located in section 104, B.B. B.&C. Survey, on the west edge of Baird in Callahan County, which showed for a well last week, opening a pool, was placed on the pump this week and made 30 bbls. of oil in three hours from the 2 feet of sand drilled 1,234-36 feet. A second test is to be drilled by the owners at once and two other operators have also staked offset locations.

Production in the Wichita Falls district averaged 57,750 bbls. per day for the week, a small gain over the previous week.

Experimental Flood

The Texas Co. has been granted permission by the Texas Railroad Commission to conduct experimental work in water flooding its Fannie Lowe 320-acre lease in the Fry pool in Brown County in an effort to increase the ultimate recovery from that lease and possibly in the entire field as others watch the experiment and also try it.

Wells would have to be abandoned in the near future as repressuring with gas has failed to bring any appreciable results lately. There are 82 wells on the lease and three wells will be used as key wells for the water flooding experiment. It is the first order of its kind issued by the commission.

There were 35 locations staked in the Wichita Falls district this week and 29 wells completed, of which 13 were oil wells with an initial production of 2,041 bbls. One well, Ray and Staniforth No. 37-C Portwood, in the pool of that name in Baylor County, made a 1,400-bbl. swabbing potential.

WICHITA FALLS (North Texas) COMPLETIONS

Archer County

L. T. Burns No. 1 M. B. Ray, total depth 1,405 feet, dry and abandoned; No. 1-Z L. F. Wilson, total depth 1,642 feet, dry and abandoned. Hattie B. Madden No. 2 J. A. Young, total depth 1,470 feet, dry and abandoned. Perkins and Cullum No. 206 Falls, top pay 1,122 feet, total depth 1,133 feet, initial production 25 bbls. per day; No. 207 Falls, top pay 1,118 feet, total depth 1,127 feet, initial production 25 bbls. per day. Petroleum Producers No. 9-D Richardson, top pay 1,243 feet, total depth 1,261 feet, initial production 123 bbls. per day; No. 2 Seibold, total depth 1,313 feet, dry and abandoned. Wilson and Ligon No. 2 J. M. Powell, top pay 1,217 feet, total depth 1,239 feet, initial production 25 bbls. per day.

Baylor County

Consolidated Oil Co. No. 4-S W. H. Portwood, top pay 1,408 feet, total depth 1,428 feet, initial production 324 bbls. per day. Ray and Staniforth No. 37-C Portwood, top pay 1,353 feet, total depth 1,374 feet, initial production 1,400 bbls. per day swabbing.

Cooke County

T. P. Frost and others No. 1 Ben Hellman, total depth 1,825 feet, dry and abandoned. Glover-Faubin and others No. 1 Andress Brothers, top pay 808 feet, total depth 843 feet, initial production 41 bbls. per day. Merrick Drilling Co. No. 14 Knabe, top pay 825 feet, total depth 840 feet, initial production 25 bbls. per day. Murry Investment Co. No. 1 L. Rhomer, top pay 931 feet, total depth 950 feet, initial production 25 bbls. per day. Ruwaldt and Couch No. 2-A Andress Brothers, top pay 749 feet, total depth 759 feet, initial production 4 bbls. per day. Sinclair Prairie Oil Co. No. 1 J. Hess, top pay 884 feet, total depth 889 feet, initial production 7 bbls. per day.

Denton County

Cranfill and Scherle No. 1 Aubrey Vaughn, total depth 1,370 feet, dry and abandoned.

Jack County

A. P. Nicholson and others No. 1 Middlebrook, total depth 495 feet, dry and abandoned. Henry Wittmer No. 1 H. R. Bloodworth, total depth 332 feet, dry and abandoned.

Wichita County

Bridwell Oil Co. No. 1 J. D. Honaker, top pay 1,011 feet, total depth 1,074 feet, initial production 6 bbls. per day; No. 2 Honaker Estate, top pay 1,059 feet, total depth 1,072 feet, initial production 6 bbls. per day.

Young County

Brazelton Brothers No. 1-A B. Ward, total depth 688 feet, dry and abandoned. Clark and Stillett No. 5 N. M. Burris, total depth 718 feet, dry and abandoned. C. D. Davis No. 1 Hawkins Estate, total depth 550 feet, dry and abandoned. Z. T. Hoehn and others No. 2 Webb, total depth 756 feet, dry and abandoned. David S. Johnson No. 3 E. Hall, top pay 729 feet, total depth 758 feet, initial production 5 bbls. per day. W. N. Maer No. 1 F. V. Hinson, total depth 875 feet, dry and abandoned. Petroleum Producers No. 13 Belknap Coal Co., total depth 750 feet, dry and abandoned. D. L. Wolf No. 2 McGrayar, total depth 694 feet, dry and abandoned.

PANHANDLE COMPLETIONS

Carson County

Alma Oil Co. No. 1 Eller, total depth 3,182 feet, plugged back to 3,010 feet, shot, initial production 4,000,000 feet gas. Magnolia Petroleum Co. No. 13 fee, top pay 2,971 feet, total depth 3,024 feet, plugged back to 2,990 feet, initial production 464 bbls. Red River Gas Co. No. 1-B Deahl, total depth 2,925 feet, initial production 11,100,000 feet gas. Texas Interstate Pipe Line Co. No. 1-81 Burnett, top pay 2,341 feet, total depth 2,499 feet, initial production 42,940,000 feet gas.

Childress County

Alma Oil Co. No. 1 Lowe, dry and abandoned 8,234 feet, show oil 4,142 feet, 4,350-55 feet, show gas 4,430-40 and 4,450-60 feet, show gas and oil 5,629-46 feet, salt water 5,653 feet, cemented liner then perforated 34 times 5,652-70 feet, pumped for month, water with little oil.

Gray County

Bradshaw Oil & Gas Co. No. 2 Pope, top pay 3,175 feet, total depth 3,305 feet, shot, initial production 280 bbls. pumping. Danciger Oil & Refining Co. No. 2 McLaughlin, top pay 3,015 feet, total depth 3,050 feet, initial production 723 bbls. pumping. Empire Gas & Fuel Co. No. 1-B Hughey, top pay 3,260 feet, total depth 3,304 feet, shot, initial production 446 bbls. pumping. King Royalty Co. No. 2 Dunkin, top pay 3,268 feet, total depth 3,293 feet, shot, initial production 387 bbls. pumping. Magnolia Petroleum Co. No. 6 Heaston, top pay 3,167 feet, total depth 3,221 feet, shot, initial production 381 bbls. pumping. Naipa Oil Co. No. 2 Leopold, top pay 3,268 feet, total depth 3,300 feet, shot, initial production 284 bbls. pumping. Parton & Holt No. 1-A Morse-Gulf, top pay 2,434 feet, total depth 2,440 feet, initial production 94 bbls. Southwest Producing Co. No. 2 Cobb, junked and abandoned 2,900 feet, estimated good for 20,000,000 feet gas at 2,605-2,825 feet. Stanolind Oil & Gas Co. No. 3 Holmes, total depth 3,300 feet, initial 367 bbls. pumping.

Moore County

Shamrock Oil & Gas Co. No. 1-C Robertson, total depth 3,544 feet, plugged back to 3,347 feet, shot and acidized, initial production 24,000,000 feet gas. Texoma Natural Gas Co. No. 1-P Bennett, total depth 2,970 feet, initial production 15,590,000 feet of gas.

Wheeler County

Phillips Petroleum Co. No. 1 Gregg, top pay 2,066 feet, total depth 2,086 feet, initial production 717 bbls. pumping. Skelly Oil Co. No. 10 Johnson, top pay 2,430 feet, total depth 2,540 feet, initial production 1,541 bbls.

Hutchinson County

Gulf Production Co. No. 3 Pitcher, total depth 3,176 feet, shot, initial production 211 bbls. pumping. International Petroleum Corp. No. 18 Lewis-Badger, top pay 2,965 feet, total depth 2,968 feet, shot, initial production 462 bbls. pumping. Naipa Oil Co. No. 1 Haile, top pay 2,992 feet, total depth 3,065 feet, shot, initial production 776 bbls. pumping. Smith & McDaniel No. 6 Pitcher, top pay 3,115 feet, total depth 3,185 feet, shot, initial production 321 bbls. pumping.

WEST TEXAS COMPLETIONS

Brewster County

H. H. King and Franklin No. 1 Gage estate, dry and abandoned 1,617 feet, elevation 4,244 feet.

Crane County

Gulf Production Co. No. 11 Waddell, top pay 3,283 feet, total depth 3,515 feet, initial production 748 bbls.

Howard County

Jamison and others No. 3 Chalk, top pay 1,160 feet, total depth 1,272 feet, initial production 100 bbls. pumping. Continental Oil Co. No. 18 Settles, top pay 2,278 feet, total depth 2,362 feet, initial production 52 bbls. per hour. International Petroleum Corp. No. 2-B Kloh, total depth 2,800 feet, plugged back to 2,735 feet, top pay 2,430 feet, shot twice, initial production 60 bbls. Murray and others No. 2 Davis, top pay 2,425 feet, total depth 2,812 feet, shot, initial production 690 bbls. pumping. Southern Oil Corp. No. 2 Denman, top pay 2,670 feet, total depth 2,775 feet, shot, initial production 906 bbls. pumping. Texas Pacific Coal & Oil Co. No. 1 Douthitt, dry and abandoned 3,220 feet, elevation 2,366 feet.

Jones County

Campbell and Elzie No. 1 Rowell, dry and abandoned 2,562 feet. Martin & Sons No. 1 Dorsey, top pay 2,060 feet, total depth 2,065 feet, initial production 82 bbls. pumping. Sandy Ridge Oil Co. No. 3 Jones, total depth 1,947 feet, swabbed and flowed 45 bbls. in six hours. Herring and Hodges No. 1 Cowsart, location abandoned.

McCulloch County

Poulter and others No. 2 Wyres, dry and abandoned 1,544 feet, elevation 1,583 feet.

Pecos County

Brown and others No. 13 Tippett, top pay 518 feet, total depth 535 feet, initial production 40 bbls. pumping. Phillips Petroleum Co. No. 6-C Monroe, top pay 1,318 feet, total depth 1,326 feet, initial production 622 bbls.

Reagan County

Bahan & Rhodes No. 1 Reed, dry and abandoned 3,566 feet in lime, elevation 2,685 feet.

Ward County

Kirk & Anderson No. 1 Allen, top pay 2,150 feet, total depth 2,240 feet, initial production 35 bbls. R. A. Alexander No. 1 Richter, top pay 2,320 feet, total depth 2,463 feet, initial production 238 bbls. Skelly Oil Co. No. 1 Boogher, top pay 2,520 feet, total depth 2,584 feet, initial production 168 bbls. Gulf Production Co. No. 64 O'Brien, top pay 2,602 feet, total depth 2,789 feet, shot twice, initial production 240 bbls. 35.8 gravity oil.

Winkler County

Sun Oil Co. No. 1 Walton, top pay 3,249 feet, total depth 3,454 feet, plugged back 3,403 feet, shot, initial production 248 bbls.; No. 1 Crow, dry and abandoned 3,578 feet, top lime 2,360 feet, elevation 2,834 feet. Maxwell and Atlantic Oil Producing Co. No. 6 Daugherty, top pay 2,774 feet, total depth 3,020 feet, shot, initial production 798 bbls.

East and East Central Texas

By
L. E. BREDBERG

SCRAMBLE FOR OIL IN EAST TEXAS RESULTS IN BONUSES

DALLAS, Tex., Dec. 16.—Forty-three wells were completed in the East Texas field in the past week and 49 locations for new wells were reported. Completions and locations are steadily falling from month to month, although the entire North Central Texas district is the only division in the state which shows anywhere near the number of completions and locations each week that the East Texas field does.

Producers' Market

Seldom is the term "overproduction" now mentioned in connection with the East Texas field since hot oil has fallen below the 25,000-bbl. per day mark and major purchasers and others continue to solicit connections, paying what might be termed "bonuses" in order to gain connections. Cash premiums are not paid, but companies are absorbing certain charges pertaining to pumping and gathering, and taking care of other obligations, so that they really constitute cash for the producers. A much different situation exists than did 8 or 10 months ago, and a feeling is in the air that an increase in price is "just around the corner."

Runs to local refineries in the field averaged 46,100 bbls. per day during the week with 28 plants operating, although not steadily. Six months ago runs to local plants averaged half again as much as this.

Extension Well to Field

Franklin & Henning (formerly Agey Drilling Co.) No. 1 McWilliams, in the J. C. De La Pina Survey, has extended the Joiner area still farther to the east since it logged broken sand at 3,540-80 feet and flowed 6 bbls. per hour at total depth of 3,663 feet in lime. Elevation is 489 feet. This well is one of many drilled by independent operators on acreage offsetting the field to the east. Hundreds of acres have been proven productive along the entire east edge of the field, this well adds to total of good acreage, and in an area formerly presumed dry because of dry holes or extreme small wells drilled between it and the field.

Interesting Wildcat

Olsen Drilling Co., Skelly Oil Co., Gardner and others No. 1 Mauldin (Southwestern Life Insurance Co.), located in the J. C. Jamison Survey, 6 miles northwest of Denison in Grayson County, drilled sand, according to the driller, from 4,450-55 feet then cored from 4,455-65 feet, recovering 8 feet of hard, fine grained sandstone with some shale, bearing a good gas odor, and 2 feet of hard black sandy shale. The gas show is believed to be in the Pennsylvanian but definite identification of the formation has not yet been established. However, the gas showing is of great interest to those watching the test and district, making the test still more important for the district.

The hole is nearly 7 degrees off vertical at its total depth of 4,465 feet. Cores practically all the way down show the hole to have a dip ranging from 25 to 50 degrees, which is giving trouble in straight drilling. Elevation is 767 feet. It is bound for the Ordovician.

Trinity Sand Test

Howze, Thompson and Peveto have made location for a Trinity sand test on the Carr lands in the M. V. Delgado Survey, about three-quarters of a mile east of Talco in Titus County. The hole is to go to 6,200 feet. Bill Hinton has contract. This will be one of the most interesting tests drilled in the district for some time, mainly because of its depth and because it is located just north of a fault which runs across Titus and Franklin Counties.

Camp Hill Pool

The Sun Oil Co. has staked locations for its Nos. 1 and 2 Rosson in the W. T. Davis Survey, in the Camp Hill Pool in eastern Anderson County, where production is coming from three sands, Carrizo, Sub-Clarksville and Woodbine. Gulf Production Co. is the only company producing in the field to date, having discovered the pool last year.

The Pioneer Exploration Co. has staked location for its No. 2 Ivy, 300 feet from its No. 1 in the Scarborough Survey, Angelina County.

L. O. McMillan and others have staked location for a Woodbine sand test on the S. W. Lang farm in the R. Sinnard Survey, 1½ miles southeast of the T. J. Wood and others' discovery southwest of Rusk in Cherokee County.

A wildcat for Falls County is to be drilled by G. W. Langley on the A. Springfield farm in the P. Herrington Survey, 3 miles northeast of Bremond.

F. B. Staples is drilling on an interesting test flanking the East Texas field on the west. Location falls on the Luther Hale farm in the T. C. Williams Survey, 3½ miles northwest of Arp in Smith County.

Abandonments

J. J. Leighton and others have abandoned No. 1 G. Cochran in the D. Bullock Survey, 6 miles south of Teague in Freestone County. It was drilled to 4,898 feet but plugged back to 4,720 feet and a drill stem test which showed only salt water and mud was made from 4,696-4,720 feet.

B. J. Russell abandoned his No. 1 O. A. Hall in the R. F. Peters Survey in the southwest part of Bowie County, at a total depth of 3,424 feet in lime. Elevation is 316 feet.

The wildcat test of Byers and others on the Mrs. E. S. Williams farm in the D. Smith Survey, 1½ miles northwest of Wills Point in Van Zandt County, was given up as a failure at a total depth of 4,308 feet. Elevation is 488 feet and it topped the sand at 3,871 feet. Base of Austin was logged at 3,212 feet.

Many failures have been chalked up for the East Texas district during the past two years, but the assembling of blocks continues.

Rowe and Haynes have listed wildcat failure for Cherokee County. They abandoned their No. 1 W. H. Walker, in the A. Gibson Survey, about 1½ miles northwest of Mount Selman, at a total depth of 5,005 feet in lower Taylor. Elevation is 559 feet. Pecan Gap chalk was topped at 3,925 feet the test logging an exceptionally thick section of this formation.

New Henderson Test

Parnell Loftis of Tyler has rig up on the Theodore Berry farm in the A. York Survey, 9 miles east of Athens in Henderson County for a Woodbine sand test. Same is located on a 3,500-acre block and 500 feet west of a test drilled to 3,900 feet five years ago.

A. Van Weelden, Royal Dutch-Shell, The Hague, Holland, and L. W. Blau, geophysical research department of the Humble Oil & Refining Company, Houston, Tex., and vice president of the Society of Petroleum Geophysicists

EAST TEXAS COMPLETIONS

Gregg County

Following were the completions in the East Texas field, with their sand record and initial production:

Arkansas Fuel No. 10-B J. C. McKinley, top sand 3,620 feet, total depth 3,645 feet, 20 bbls. in 15 minutes; No. 5-C J. C. McKinley, top sand 3,595-3,617 ft., total depth 3,618 feet, 17 bbls. in 15 minutes; No. 14 Kembert, top sand 3,450 feet, total depth 3,477 feet, 25 bbls. in 15 minutes; No. 8-B S. G. Smith, top sand 3,527-41 feet, total depth 3,543 feet, 18 bbls. in 15 minutes.

Atlantic No. 17 H. Prichard, top sand 3,505 feet, total depth 3,530 feet, 128 bbls. in one hour. Faith Oil Corp. No. 8 J. Fuller, top sand 3,667 feet, total depth 3,695 feet, 64 bbls. in one hour. Magnolia Pet. Co. No. 12 Hobart Key, top sand 3,526 feet, total depth 3,547 feet, 108 bbls. in one hour. B. F. Phillis No. 4 fee, top sand 3,606 feet, total depth 3,607 feet, 40 bbls. in 30 minutes.

S. L. G. Oil Co. No. 3 D. W. McQueen, top sand 3,554 feet, total depth 3,564 feet, 12 bbls. in 40 minutes, three-eighths inch choke. Simms-Russ No. 15 Flewellen, top sand 3,668 feet, total depth 3,690 feet, 10 bbls. in 10 minutes. Simms & Stanolind No. 38-B Flewellen, top sand 3,623 feet, total depth 3,653 feet, 11 bbls. in 10 minutes. Stanolind Oil & Gas Co. No. 13 V. Calvin, top sand 3,575 feet, total depth 3,641 feet, 14 bbls. in 15 minutes; No. 10 H. Stephens, top sand 3,511 feet, total depth 3,593 feet, 26 bbls. in 15 minutes. Stanolind-Simms-Continental No. 15-C Flewellen, top sand 3,645 feet, total depth 3,666 feet, 16 bbls. in 15 minutes.

Atlantic No. 17 L. P. Griffin, top sand 3,539-80 feet, total depth 3,590 feet, 100 bbls. in hour. Yandle Rogers No. 3 A. L. Still, top sand 3,535 feet, total depth 3,550 feet, pumping 15 bbls. an hour. Shell Pet. No. 12-B

We pause
to extend
Greetings
to our
friends the
world over
OIL WELL SUPPLY COMPANY

Rivens, top sand 3,652 feet, total depth 3,658 feet, 40 bbls. in 30 minutes; No. 14-A J. Douglas, top sand 3,613 feet, total depth 3,620 feet, 35 bbls. in 30 minutes.

Angelina County

Bryant & Lyons No. 1 Allen, total depth 90 feet, abandoned.

Bowie County

B. J. Russell No. 1 Hall, total depth 3,424 feet lime, dry and abandoned, elevation 316 feet.

Freestone County

Leighton and others No 1 Cochran, total depth 4,898 feet, plugged back to 4,720 feet, drill stem test 4,696-4,720 feet, made 300 feet mud and 1,500 feet salt water in 15 minutes, abandoned, elevation 481 feet.

Houston County

Housh and others No. 1 Houston County Lumber Co., total depth 7,037 feet, dry and abandoned, elevation 383 feet.

Smith County

Hunt Prod. Co. No. 17-B Fair, top sand 3,684 feet, total depth 3,686 feet, 35 bbls. in 30 minutes. Illinois Oil Co. No. 31 Mayfield, top sand 3,840 feet, total depth 3,841 feet, 35 bbls. in one hour.

Upshur County

B. G Barnett No. 6-A Bradshaw, top sand 3,705 feet, total depth 3,710 feet, 30 bbls. in 40 minutes through half-inch choke. Gulf Prod. Co. No. 6 W. A. Ray, top sand 3,586 feet, total depth 3,594 feet, 15 bbls. in one hour. E. C. Johnston No. 4-B fee, top sand 3,717 feet, total depth 3,723 feet, 40 bbls. in one hour.

Magnolia Pet. No 12 W. W. Blackwell, top sand 3,680 feet, total depth 3,687 feet, 76 bbls. in one hour. Southland Drlg. and others No. 38 O'Byrne, top sand 3,655 feet, total depth 3,660 feet, 45 bbls. in hour. Stanolind-Falcon No. 7-C Everett, top sand 3,632 feet, total depth 3,645 feet, 20 bbls. in 28 minutes.

Rusk County

Hurtle Oil Co. No. 9 Williams, top sand 3,610 feet, total depth 3,646 feet, 42 bbls. in three hours. Stewart Oil Co. No. 7 Holt, top sand 3,500 feet, total depth 3,531 feet, 20 bbls. daily on air lift. Franklin & Herrin (formerly Agey Drlg. Co.) No. 1 McWilliams, top sand 3,540-80 feet, top Geo. Lime 3,660 feet, total depth 3,663 feet, pumping 6 bbls. in one hour. Beaucham-Birdwell No. 3 D. Bradford, top sand 3,542-82 feet, total depth 3,634 feet, pumping 20 bbls. in seven hours.

Gant-Garvin-Wegner No. 5 Hale, top sand 3,550 feet, total depth 3,568 feet, 12 bbls. in one hour; No. 9 Moore, top sand 3,540 feet, total depth 3,600 feet, 35 bbls. in one hour. Great States Oil Co. No. 2 Herring, top sand 3,630 feet, total depth 3,650 feet, pumping 50 bbls. in 24 hours. Humble No. 48 W. L. Price, top sand 3,712-54 feet, total depth 3,733 feet, 50 bbls. in one hour. Hunt Prod. Co. No. 14-D Bradford, top sand 3,539 feet, total depth 3,629 feet, pumping 21 bbls. in one hour.

Hurricane Pet. Co. No. 6 Keeling, top sand 3,706 feet, total depth 3,731 feet, 70 bbls. in one hour. Magnolia Pet. No. 6 J. W. Flanagan, top sand 3,635-40 feet, total depth 3,650 feet, 14 bbls. in 15 minutes through 1-inch choke. Marathon No. 26 H. C. Burton, top sand 3,654 feet, total depth 3,684 feet, 60 bbls. in one hour; No. 20 C. L. Graham, top sand 3,611 feet, total depth 3,656 feet, 88 bbls. in one hour.

Pet. Marketing Co. No. 4 J. E. Arnold, top sand 3,647-78 feet, total depth 3,700 feet, 30 bbls in one hour. Stanolind O. & G. Co. No. 12 J. B. Milstead, top sand 3,658 feet, total depth 3,727 feet, 12 bbls. in 15 minutes. Tide Water No. 8-A J. M. Finney, top sand 3,685-3,715 feet, total depth 3,729 feet, 10 bbls. in 15 minutes. R. H. Vise No. 11 W O. Alford, top sand 3,796 feet, total depth 3,798 feet, 35 bbls. in one hour.

Red River County

Don F. Cleary No. 1 C. W. Mowery, total depth 1,144 feet, failed to exhaust water, abandoned.

Van Zandt County

Byers and others No. 1 Williams, total depth 4,308 feet, salt water sand, abandoned, elevation 488 feet.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Dec. 14.—Crude oil and crude naphtha deliveries to the Calgary refineries from the Turner Valley field in November totaled 81,305 bbls., compared with 75,185 bbls. in October. Estimating at least 80,000 bbls. in December, the total for 1935 should be 961,173 bbls. against 1,144,356 bbls. in 1934.

Deliveries to Imperial Oil Refineries, Ltd., in November included 6,337 bbls. of clear naphtha, 61,983 bbls. of discolored naphtha and 1,947 bbls. of crude. Bell Refining Co. took 11,038 bbls. of naphtha and crude. The Bell receipts included 5,247.8 bbls. from Model Oils; 1,607.5 bbls. from Mar Jon Oil Co.; 747.8 bbls. from Spooner Oils; and 3,384.24 bbls. from Highwood-Sarcee Oils.

North Turner Valley

In the North Turner Valley field, Model Oils No. 3, LSD 1, section 22-20-3w5, is cleaning out after a shot of 1,020 quarts. It looks like a fair producer with bottom at 6,240 feet, 506 feet in the Madison.

Farther east, Royalite Oil Co. No. 27, LSD 4, section 23-20-3w5, is below 2,901 feet.

South Turner Valley

In section 28-18-2w5, South Turner Valley, Renfrew Royalties No. 1, LSD 3, is cementing 6-inch casing in the top of the lime at 6,020 feet preparatory to drilling into production. Separator hook-up is being installed. When the hole was opened after standing several weeks it was partly filled with light crude, apparently from some of the upper horizons.

In the same section, British Dominion Oil & Development Corp. No. 4, LSD 6, is in the second porous horizon of the Madison below 6,250 feet and taking production while deepening. There has been some increase in wet gas with a much larger increase in naphtha, and looks like a good producer. Both the Renfrew and British Dominion wells are on the west side of the structure and prove a considerable extension to the field in that direction. In the NW corner of section 28, Turner Valley Royalties No. 1, LSD 13, is rigging up steel derrick to resume from 3,160 feet. Location is a little west of Century Royalties No. 1 which is now the largest producer in section 28.

Farther south, Union Freehold Oil Corp. No. 1, LSD 8, section 21-18-2w5, reentered the Madison lime at 5,600 feet after sidetracking from about 5,075 feet, and has cemented 6-inch casing at 5,615 feet. The lime was encountered at practically the same depth as in Highwood-Sarcee No. 1 producer in LSD 16, about a half mile north. In the SE corner of the section Highwood-Sarcee No. 2, LSD 1, is below 1,020 feet and running three tours.

Tests in the Foothills

In the Forest Reserve area west of Olds, Hunter Valley Oil Co. No. 1 McLaren, LSD 12, section 13-31-10w5, is in a limey formation below 5,307 feet.

On the Moose dome, west of Calgary, Moose Oils No. 2, LSD 8, section 29-22-6w5, is standing cemented at 252 feet. On the Rickert structure west of Turner Valley, Paramount Oils No. 1, LSD 2, section 28-19-4w5, is below 4,996 feet.

On the Highwood-Sinclair structure south of Turner Valley, Maple Leaf Royalties No. 1 Banner, LSD 6, section 34-17-3w5, has resumed from 2,595 feet.

East of Turner Valley, McLeod Oil Co. No. 1 New Valley, LSD 4, section 6-21-2w5, on the New Valley structure, is around 4,000 feet. Farther south, on the Aldersyde structure, Ranchmen's Gas & Oil Co. No. 1, LSD 16, section 13-20-28w4, is testing in the lower sand around 6,530 feet.

On the Watson structure north and west of Lundbreck, Mar Jon Oil Co. No. 3, LSD 3, section 4-10-2w5, is deepening from 3,705 feet after cementing casing. It has a flow of 4,000,000 feet a day. The gas is quite wet and comes from the upper Blairmore formation, the sand being equivalent to either the Stockmen's or McDougall-Segur sand of the Turner Valley field. The sand was met at 3,565 feet and a change of formation was indicated at 3,705 feet. The gas is being used to fire the boilers, the surplus going into flare.

In the Oil City field, Waterton Lakes Park, Oil City Royalties No. 1, section 30-1-30w4, is below 2,380 feet. In the adjacent Pincher Creek area, Weymarn Petroleum No. 2, LSD 5, section 7-6-1w5, is below 4,330 feet.

Border Fields

On the Del Bonita structure, southern Alberta, Terminal Oil Co. No. 1, H. Orcutt location, NE section 18-1-21w4, is at about 5,043 feet and running tubing for a production test. The wet gas flow from the top of the Madison lime has been estimated around 5,000,000 feet a day. In the Twin River area, 10 miles farther east, E. H. Rosenburg No. 3 Twin River, LSD 9, section 10-2-20w4, is rigged ready to spud. Location is about 6,000 feet north and west of Nordon-Romey No. 2 Twin River,

(Continued on Page 84)

Rocky Mountain Runs

Production estimates for the week ended December 14:

WYOMING

	Bbls.
Salt Creek	16,940
Big Muddy	1,550
Badger Basin	40
Black Mountain	70
Byron	1,710
Dallas Derby	560
Dutton Creek	80
Elk Basin	80
Ferris	30
Frannie	300
Garland	1,020
Grass Creek	2,310
Hamilton dome	1,040
Hudson	250
LaBarge	1,070
Lance Creek	1,960
Lost Soldier	1,260
Mule Creek	shut in
Midway	50
Oregon Basin	4,020
Osage	660
Pilot Butte	30
Rex Lake	shut in
Rock River	1,310
South Casper	410
Poison Spider	200
Teapot	20
Waugh dome	100
Total Wyoming	37,570

MONTANA

Buckley-Border	140
Cat Creek	740
Cut Bank	7,330
Dry Creek	170
Kevin-Sunburst	3,720
Lake Basin	50
Pondera	1,060
Total Montana	13,210

COLORADO

Florence	220
Fort Collins and Wellington	350
Iles dome	2,770
Moffat	350
Orchard	70
Rangely	70
Tow Creek	180
Total Colorado	4,080

NEW MEXICO

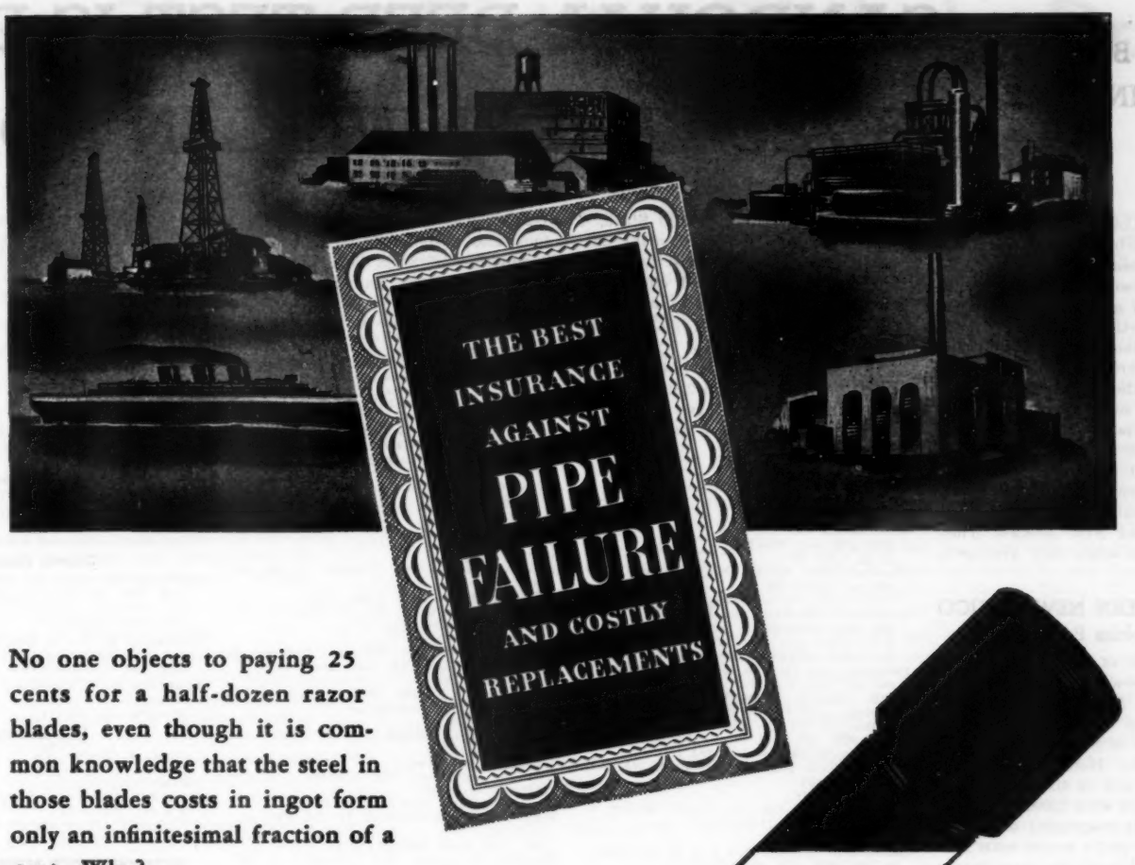
Artesia	630
Cooper area	3,970
Eunice area	10,500
Hobbs	28,050
Hogback	200
Hospah	shut in
Jal	3,670
Lea area	1,160
Maljamar	1,550
Monument	1,640
Rattlesnake	820
Table Mesa	90
Total New Mexico	57,280
Total Rocky Mountain region	112,140

Firm Reorganized

Manning & Martin, Inc., drilling contracting firm, has been reorganized as successor to Manning & Terry, Inc., following the settlement of the estate of Lloyd Terry, who was killed in an airplane accident in Wyoming several months ago. Fred Manning will be in charge of the firm's business in the Rocky Mountain area and C. D. Martin will be in charge of the Tulsa office.

Petroleum Officers

SARNIA, Ontario, Dec. 14.—At the annual meeting of International Petroleum Co. held here, the following officers were elected: President George Harrison Smith; vice president, R. V. LeSueur; directors, C. A. Eames, F. B. Bimel, O. B. Hopkins, C. S. Wilcox, Montague Piesse, Capt. J. W. Flanagan and B. A. Myers.



No one objects to paying 25 cents for a half-dozen razor blades, even though it is common knowledge that the steel in those blades costs in ingot form only an infinitesimal fraction of a cent. Why?

Those blades do what the steel in the ingot could not do before work was done on it. You pay for the service the steel has been processed to do.

It's the same with Toncan Iron Pipe. Open hearth iron has been alloyed with copper and molybdenum and processed to resist corrosion—and it does to a greater degree than any other ferrous material in its price class. Naturally, it costs more than ordinary pipe, but don't figure it that way. Figure the slight additional cost of the pipe itself as insurance against pipe failure. Then you will quickly realize how slight a premium you are paying for long dependable service—how little you are paying to cut down repair and replacement expense. And don't forget that it costs more to tear out failed pipe and replace it with new than it costs to make the original pipe installation. So the smart thing to do is to install Toncan Copper Molybdenum Iron Pipe in the first place and save money.

REG. U.S. PAT. OFF.
TONCAN
COPPER
MOLYBDENUM
IRON PIPE

REPUBLIC STEEL

Republic Steel
CORPORATION
GENERAL OFFICES · · · YOUNGSTOWN, OHIO

Rocky Mountain Area

By
T. R. INGRAM

SANDOVAL DEEP TEST IS DRY; 16,725-BARREL WELL IN HOBBS

DENVER, Colo., Dec. 16. — Gypsy Oil Co.'s 16,725-bbl. well in the Hobbs pool in southeastern New Mexico, which well also produced over 16,000,000 feet of gas initially, was the largest completion of the week in the Rocky Mountain fields. Other good wells were completed in Lea County, and there were disappointments in the southeastern areas as the detailed report will show.

A considerable number of tests that have been shut down for some time have been taken off the drilling reports from Montana, Colorado, Wyoming, Utah and New Mexico. They will be resumed when they are again active.

SOUTHEASTERN NEW MEXICO

Hobbs Pool

The big well of the week in the southeastern New Mexico fields was Gypsy Oil Co. No. 3 North Grimes, 1,650 feet from south and 330 feet from west lines of SE quarter section 21-18-38, in the Hobbs pool, Lea County. It had pay at 4,170-4,233 feet and was acidized with 2,000 and then 5,000 gallons. It responded with 16,725 bbls. of oil in 24 hours with 16,072,000 feet of gas. No new work was started during the week.

Gypsy Oil Co. No. 1 Steve Taylor, C SE NE sec. 24-18-38 (wildcat).
T.D. 4,883 ft. Swabbed all water. Plugged back to 4,760 ft.; testing.
Tide Water Oil Co. No. 1 State, 2,310 ft. from N, 330 ft. from E lines, sec. 14-18-37.
T.D. 4,368 ft.; swabbed sulfur water after acidizing; plugged back to 3,860 ft. to test sand; perforated casing at 3,345-65 ft.; swbd. 19 bbls. in 24 hrs.; will put on pump.
Shell Pet. Corp. No. 2 Rice, 1,650 ft. from S and 990 ft. from E lines of SE ¼ sec. 13-18-37.
T.D. 4,088 ft.; acidized; flowed 191 bbls. in 7 hrs. through tubing.
Shell Pet. Corp. No. 1 State E, C W half SE SE sec. 14-18-37.
Ran 7-in. csg. to 4,023 ft
Texas Co. No. 1 Mattern, C NW SW sec. 20-19-37.
Drlg. 3,561 ft.
Phillips Pet. Co. No. 1 Land Office, C NE SW sec. 19-19-37.
Drlg. 3,668 ft.; flowed 165 bbls. in 1 hr. through tubing and 135 bbls. second hr. T.D. 3,996 ft.
Barnsdall Oil Co. No. 2 Cooper, C SW SW sec. 7-20-37.
Drlg. 3,612 ft.

Eunice Area

The Eunice district in Lea County, New Mexico, saw the completion of five wells in the past week.

Gypsy Oil Co. No. 6 Ball-Ramsey-State, C NW SW section 4-21-36, flowed 660 bbls. naturally, with 750,000 feet of gas the first 24 hours from pay at 3,805-96 feet. Same company's No. 1 North-Bell-State, C SE SE section 6-21-36, made a natural flow of 511 bbls. of oil and 1,500,000 feet of gas the first 24 hours from pay at 3,884-95 feet.

Continental Oil Co. completed two, its No. 2-B-17 Meyer, C SE SE section 20-21-36 making a 24-hour natural flow of 960 bbls. of oil through three-quarter-inch choke, and 740,000 feet of gas, and No. 6 C-20 State, C NE NW section 20-21-36, flowing naturally 1,944 bbls. the first 24 hours through three-quarter-inch choke, and 1,700,000 feet of gas in 24 hours.

Shell Petroleum Corp. and Devonian Oil Co. No. 3 State, C NE NE section 20-21-36, made a natural flow of 1,212 bbls. of oil and 2,890,000 feet of gas the first 24 hours.

Five new operations were started as listed below.

Gypsy Oil Co. No. 3 Arnott-Ramsay C, C NW SW sec. 21-21-36.
Drlg. 1,435 ft.
Continental Oil Co. No. 7-C-20 State, C NW SW sec. 20-21-36.
Drlg. 3,757 ft.
General Crude Oil Co. No. 1 State, C NW SW sec. 32-21-36.
T.D. 3,964 ft.; acidized; prep. to shoot.
Penrose & Rowan No. 1 Carry, C NW SW sec. 22-22-37.
T.D. 3,555 ft.; 1,500 ft. of oil in hole in 6 hrs. Waiting for proration test.
Devonian Oil Co. No. 1 State-Heasley, C SE SW sec. 5-21-36.
T.D. 3,888 ft.; flowed 22 bbls. through tubing in 50 minutes.
Continental Oil Co. No. 4-B-8 Meyer, C NW NW sec. 8-21-36.
Set 5½-in. casing at 3,802 ft.
Getty Oil Co. No. 1 State B, C NE NE sec. 16-21-36.
Drlg. 2,295 ft.
Continental Oil Co. No. 5-A-17 Meyer, C SE SW sec. 17-21-36.
Drlg. at 4,038 ft.
Continental Oil Co. No. 2-A-30 Lockhart, C NE NW NE sec. 30-21-36.
Set 5½-in. casing 3,830 ft.; T.D. 3,920 ft.
Texas Co. No. 1 J. M. Dean, C SE SW sec. 28-22-36.
Drlg. 3,233 ft.
Skelly Oil Co. No. 5 State B, C SW NE sec. 16-21-36.
Set 7-in. casing at 3,770 ft.
Continental Oil Co. No. 7-C-20 State, C NE SW sec. 20-21-36.
Drlg. 3,575 ft.
Gypsy Oil Co. No. 2 Orcutt, C SW SW sec. 5-21-36.
Drlg. 2,646 ft.
Humble O. & R. Co. No. 2 Adkins, C SW SW sec. 10-21-36.
Drlg. 303 ft.
Empire Gas & Fuel Co. No. 3 State C, C NE SW sec. 16-21-36.
Drlg. 3,292 ft.
Continental Oil Co. No. 8-C-20 State, C NW SW sec. 20-21-36.
T.D. 2,810 ft.; set 7⅝-in. casing.
Gypsy Oil Co. No. 2 Arnott Ramsey, C NW NW sec. 21-21-36.
Drlg. 3,318 ft.
Gypsy Oil Co. No. 2 North Bell-State, C SE NE sec. 6-21-36.
Drlg. 1,092 ft.
Atlantic Oil Prod. Co. No. 4 State-H, C NE NE sec. 5-21-36.
Drlg. 3,360 ft.
Gypsy Oil Co. No. 7 Bell-Ramsay-State, C SW NW sec. 4-21-36.
Rigging up rotary.
Tide Water Oil Co. No. 1 State, C NW SE sec. 16-21-36.
Location.
Empire Gas & Fuel Co. No. 1 S. E. Felton, C NE NW sec. 28-21-36.
Rigging up rotary.
Amerada Pet. Corp. No. 2 Houston, C NE NE sec. 7-21-36.
Location.
Shell Pet. Corp. and Devonian Oil Co. No. 4 State, C NE NE sec. 20-21-36.
Location.
Humble Oil & Ref. Co. No. 7 State B, C NE SE sec. 29-21-36.
Cellar and pits.
Gypsy Oil Co. No. 1 A. L. Christmas, C SE SE sec. 27-22-36.
Location.
Empire Gas & Fuel Co. No. 3 State D, C NE NE sec. 32-21-36.
Cellar and pits.

Monument Area

One well was completed in the Monument area in Lea County and no new work was started. The Texas Co. No. 1 State E, C SW SW section 1-20-36, was acidized with 2,000 gallons and responded with an initial production of 3,288 bbls. of oil and 1,788,000 feet of gas from pay at 3,820-90 feet.

Texas Co. No. 1 State E, C SW SW sec. 1-20-36.
Completed.
Skelly Oil Co. No. 1 State-Monument, C SE SE sec. 13-19-36.
Swabbed and flowed 20 bbls. per hour after acidizing; T.D. 4,055 ft.; reacidizing.
Shell Petroleum Corp No. 1 State C, C NE NE sec. 24-19-36.
T.D. 4,049 ft.; flowed and swabbed 15 bbls. in 6 hrs.
Amerada Pet. Corp. No. 1 State H, C SW SE sec. 1-20-36.
Drlg. 3,516 ft.
Skelly Oil Co. No. 1 State D, C SE SE sec. 1-20-36.
Drlg. 2,826 ft.
Superior Oil Co. No. 3 State, C SE NE sec. 2-20-36.
T.D. 3,791 ft.; set 7-in. casing.
Amerada Pet. Corp. No. 1 Weir, C SW SW sec. 35-19-36.
Drlg. 2,051 ft.
Republic Production Co. No. 2 Selby & Mavesty, C NE SW sec. 25-19-36.
Drlg. 1,420 ft.
Amerada Pet. Corp. No. 2 State D, C SW NW sec. 1-20-36.
Drlg. 940 ft.
Texas Co. No. 2 State E, C NW SW sec. 1-20-36.
Rigging up rotary.
Amerada Pet. Corp. No. 1 State J, C SE SE sec. 2-20-36.
Set 12½-inch pipe at 220 ft.
Texas Co. No. 3 State E, C NW SW sec. 1-20-36.
Set 15½-inch casing 260 ft.
Amerada Pet. Corp. No. 1 State I, C NE NW sec. 2-20-36.
Set 9⅝-inch casing at 2,375 ft.

Cooper Area

Tide Water Oil Co. No. 1 Coats, C SW NE sec. 10-24s-36e.
Dry and abandoned at 3,700 ft.
Skelly Oil Co. No. 1 Harrison, C NW SW sec. 5-23-37.
T.D. 3,780 ft., 2,500 feet of fluid, mostly oil in hole.
Gypsy Oil Co. No. 1 Lemunion, C NE NE sec. 28-23-37.
Shut down at 539 ft.
Gypsy Oil Co. No. 2 Cooper, C NW SE sec. 14-24-36.
Drlg. 3,680 ft.
Gypsy Oil Co. No. 2 Cooper, C NW SE sec. 23-24-36.
T.D. 3,616 ft.; showed 1,500,000 ft. of gas; shut in.
Humble Oil & Ref. Co. No. 1 Hunter, C NW NW sec. 24-24-36.
T.D. 3,630 ft.; will acidize.
Continental Oil Co. No. 2-A-15 Vaughan, 1,980 ft. E and 660 ft. S lines sec. 15-24-36.
Location.
Skelly Oil Co. No. 1 Simms, C SW NE sec. 4-23-37.
Rigging up rotary.

Jal Area

Byrd-Frost, Inc. No. 3 Wells A, 1,980 ft. from N and 660 ft. from W lines of sec. 12-25-36.
Drlg. 3,075 ft.
Harry Leonard No. 1-B Justice, SW NW NW sec. 26-25-37.
T.D. 3,501 ft.; P.B. to 2,970 ft. for gas well; testing shutoff; testing.
Texas Co. No. 1 Cagle B, C NW SW sec. 15-26-37.
Set 9⅝-in. casing 1,144 ft.
Stanolind Oil & Gas Co. No. 11-B Farnsworth, C NE SW sec. 7-26-37.
Location.

Maljamar Area

Maljamar Oil & Gas Co. No. 5 Baish, C SW NE sec. 21-17-32.
T.D. 2,370 ft., flowed 100 bbls. daily; testing.

Eddy County

R. D. Compton No. 7 Brainard, 200 ft. from S and 1,060 ft. from E lines of sec. 5-18-27.
Drlg. 315 ft.
Emperor Oil Co. No. 2 Puckett, C W½ NW NE sec. 24-17-31.
T.D. 3,495 ft.; 1,200 ft. of oil in hole; waiting for casing.
Barnsdall Oil Co. No. 3 Dodd, C SE NE sec. 22-17-29.
T.D. 790 ft., making repairs.
Fred Brainerd No. 1 Featherstone, CEL SW SW sec. 35-16s-28e.
T.D. 1,580 ft.; pulled 8¼-in. casing.
Etz Bros. No. 1 State, C SE SW sec. 16-17s-30e.
Drlg. 3,245 ft.; flowing 150 bbls. of oil per day.
Red Lake Oil Co. No. 5 State, NW NW NE sec. 27-17s-28e.
800 ft. of oil in hole after shot at 1,902-15 ft.; will pump.
T. J. Haley et al No. 1 Rose, C NE NE sec. 28-24-37.
Drlg. 132 ft.
Flynn, Welch & Yates No. 72 State, C NW SW NE sec. 10-19-28.
Drlg. 1,630 ft.

Sandoval County

Continental Oil Co. No. 1 L-Ranch, 2,010 ft. from N and 330 ft. from E lines, sec. 2-13-14w.
Dry and abandoned 6,220 ft.

Chaves County

Warrman Oil Trust No. 1 Weldon & Hoar, NW NW SE sec. 9-14-25.
T.D. 1,683 ft. in sand; P.B. to 1,395 ft.; dry and abandoned.
Franks et al No. 1 Roswell, L&S.C. NW cor NE NE NE sec. 30-11-25.
Dry and abandoned 995 ft.
Tannehill No. 2 Campbell, C NE SE sec. 1-11-25.
Rigging up rotary.

Lea County

Vierson & Brown No. 1 Robbins, C NW SE sec. 14-11-32.
Drlg. 3,977 ft.
Shell Pet. Co. No. 1 State-Endura, C NE NE sec. 24-21-35.
T.D. 3,677 ft. (correction) blowing gas and spraying oil.

NORTHWEST NEW MEXICO

Bernalillo County

Norine Realty Co., Inc., No. 1 Galldegas grant, SE SW NW sec. 19-11n-4e.
S.D. 630 ft.

Harding County

Khaay et al No. 1 De Baca, C sec. 19-20n-31e.
Running 8¼-in. at 847 ft.; 10-in. at 250 ft. (first report).

McKinley County

Seward et al No. 1 State, NE NE NE sec. 2-19n-9w.
Spudding 250 ft. in shale (first report).
Forth & Hickerson No. 2 Santa Fe, NE NW NE sec. 29-20-9w.
Drlg. below 200 ft. (formerly Lark Drilling Co.).
Montrose Oil & Gas Co. No. 1 State, NE NE sec. 28-20n-9w.
Drlg. 300 ft.; 6⅝-in. at 300 ft.; small show oil at 212 ft.
S. Dysart et al No. 1 Bouton, E NW NE sec. 14-4n-10w.
Old well drilled deeper; resumed at 1,365 ft.

Quay County

Danube Drilling Co. No. 1 Will Wallace, NE NE SE sec. 12-9n-32e.
T.D. 1,000 ft.; 10-in. cemented at 505 ft.; cleaning out at 930 ft.
Quay County Dev. Co. No. 1 Wallace, SW SW SE sec. 19-9n-33e.
S.D. 814 ft.; rainbows at 814 ft.; show of salt water at 775 ft.

Rio Arriba County

El Vado Structure Properties Co., Ltd., No. 1 Tierra Amarilla grant, NE sec. 26-3e-1e (unsurveyed).
S.D.; rig on location.

Sandoval County

Continental Oil Co. No. 1 L-Bar Cattle Co., CEL SE NE sec. 2-13n-4w.
S.D. 6,220 ft. in schist; probably abandoned.

San Juan County

J. F. Cross et al No. 1 Wilson, SW SW SE sec. 17-30-11w.
S.D. 810 ft.
Cross & Poole No. 1 Aztec, sec. 1-30-11w.
Making water shutoff at 740 ft.
Southern Union Gas Co. No. 4 Government, C NW NE sec. 14-28n-11w.
Drlg. 1,200 ft.; preparing to run 8¼-in.
Nick Spatter No. 1 fee, C NE SW sec. 32-31-11w.
Running 6⅝-in. at 1,780 ft.

(Continued on Page 86)

Producing Horizons in Balcones Fault; New Chapter Written With the Drill

By JOHN W. MERRITT

There is little that can be added to the production geology of the Balcones fault zone fields, save in the matter of producing horizons. This year, however, a new chapter has been written with the drill, with relation to the areal distribution of that zone.

For about five years the Amerada-Rycade exploration program has been carried on, in the search for new fields westward from production known up to that time. This work, after much time and a considerable expenditure of money, has at last added definitely to the knowledge of and interest in the development of probable new fields. Thus, through courageous work, and in the face of much adverse criticism, these companies have at last reaped their deserved reward.

This paper treats the geology and geological problems connected with this new development. It is based upon and is the result of several months' work in the field.

History of Development

In 1913, while drilling for water, the discoverer of the Somerset Pool found oil and the field came into being. The original wells, and most of those that followed, were small. They rarely exceeded 100 bbls. per day initial. The production in this field was found in the Navarro and possibly partly in the Midway formation, in sand and sandy shale. The oil ranged from a gravity of 12 up to 37. Since that time this field has produced phenomenally, the total reaching several million barrels, with wells still producing profitably. Later attempts, made westward and southwestward, proved, for the most part, failures.

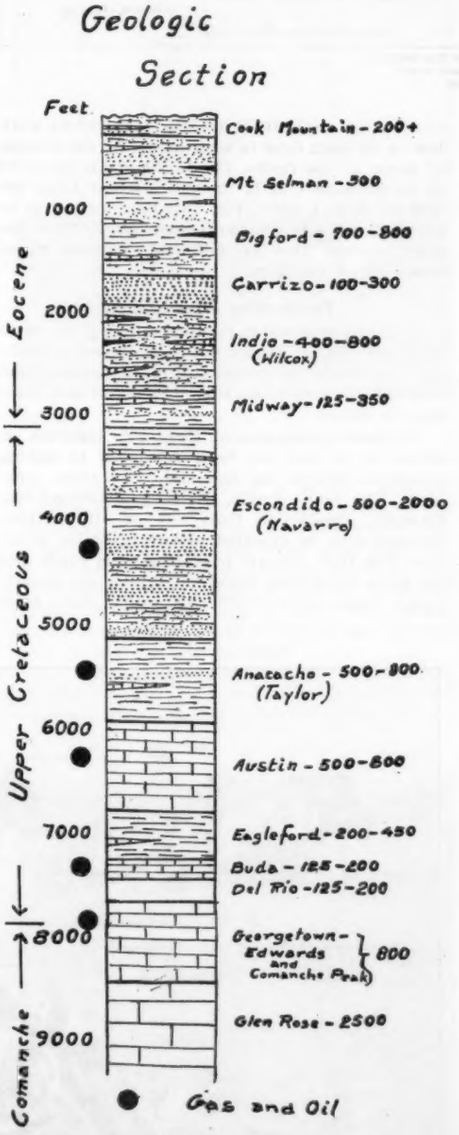
Early in the last decade a gas field was developed in north-central Zavala County (see map) with production coming from shallow wells in the Navarro and Taylor. These wells produced from depths ranging from 600 to 2,000 feet and yielded initially from 3,000,000 to 30,000,000 feet per day per well. Oil showings were found in such quantity as to cause much excitement and wells were drilled all over the northern part of this county and the southern part of Uvalde County to the north. Most of these latter wells, while drilled on structure in many cases, were on structures of such a broken nature that they were found unsuitable as reservoirs.

Oil tests were made, also, in Zavala County because of the known occurrence of asphalt on the Nueces River where it crosses the Zavala County line. The asphalt here occurs in the sandstone bed which crosses the river at this point. The asphalt content reached as high as 20 per cent. The occurrence falls in or just below the Carrizo, and on a fault.

Gas was also developed in Maverick County several years ago by the Amerada-Rycade in search of oil. Oil was also found on this Chittim anticline, but not in such quantities as to be considered worthy of exploitation. The oil and gas occurred in the lower part of the upper Cretaceous and in the upper part of the Comanche Cretaceous.

About five years ago the Amerada-Rycade began the study of a belt of structures in Frio County, running southwestward from Pearsall. Following a study of the surface geology, determinable by work on an oyster bed near the base of the Cook Mountain formation, they carried on extensive geophysical examinations, supplemented by numerous core holes. The first well was a failure. The second well came in for 3,500,000 feet of gas from the Edwards, below which gas horizon a few feet was found a 12-bbl. show of oil. This well was plugged back to the gas and completed. The gas was then piped to the next location, near Pearsall, at the opposite end of their 90,000-acre block. Here a deep well was drilled. It was carried to 10,050 feet and had shows of oil and gas beginning with the Navarro at about 3,900 feet and continuing to formations close to the bottom of the hole. This well was plugged back to the Navarro and completed for a small oil well, making considerable gas.

A new well was then begun nearby and completed for a good well in the Navarro. This was



followed by two more to the same sand which were exceptionally large. Following the successful proof of a most interesting Navarro Pool, an Edwards test was begun not far from the first dry hole, which was dry in the Edwards. The new well found copious shows from the Navarro down and ended in the Edwards with the discovery of sulphur water. It was plugged back through the Georgetown and Del Rio to the Buda where it was completed for 2,400 bbls. per day. This development, to the writer's belief, has proved three separate structures and four horizons, since the latter well also showed sufficiently to be considered a well in the Austin.

Regional Geology

The formations occurring at the surface in Frio and Zavala Counties include the following, from upper to lower: Cook Mountain, Mount Selman, Bigford, Carrizo, Indio (Wilcox), Midway, Escondido (Navarro). They lie in bands striking westward along the northeast part of Zavala County and in Frio County. The west and south parts of Zavala County, however, show a change in strike which marks the end of the Rio Grande embayment. The dips at the surface range between 20 and 30 feet per mile normally. They are southward in Frio and north Zavala Counties, and in the remainder of Zavala County the rocks dip at the same rate to the southeast, east and northeast.

There are few scattered exposures of hard ledges of sandstone, limestone and sandy limestone. An exception is the Carrizo, which is often well indurated and which is exposed in prominent ridges and escarpments of sandstone.

The regional structure of the two counties is that of a plunging syncline, whose axis lies in a southeasterly direction. This syncline forms the head of the Rio Grande embayment.

The thickness of the formations, or many of them, increases basinward, as represented by a basinward dip on the Edwards limestone of between 250 and 300 feet per mile between Humble Woodward dry hole in the northwest corner of the county and the Amerada-Half & Oppenheimer, a few miles southeast; when compared with a surface dip of only 20 to 30 feet per mile.

This regional monocline is interrupted by normal faults and small and sometimes very large anticlinal folds. These folds and faults occur principally in a trend running northeast-southwest and are closely related one to the other.

Stratigraphy

Beginning with the Glen Rose, which forms, with the overlying Edwards, the top of the Comanche Cretaceous in this region, the following descriptions of the formations with their range of thickness gives one the stratigraphic section of these counties.

Glen Rose—This formation, which consists of heavy gray limestone with gray to black shales and some anhydrite, attains a thickness of more than 2,500 feet where it has been penetrated in the northern part of the county.

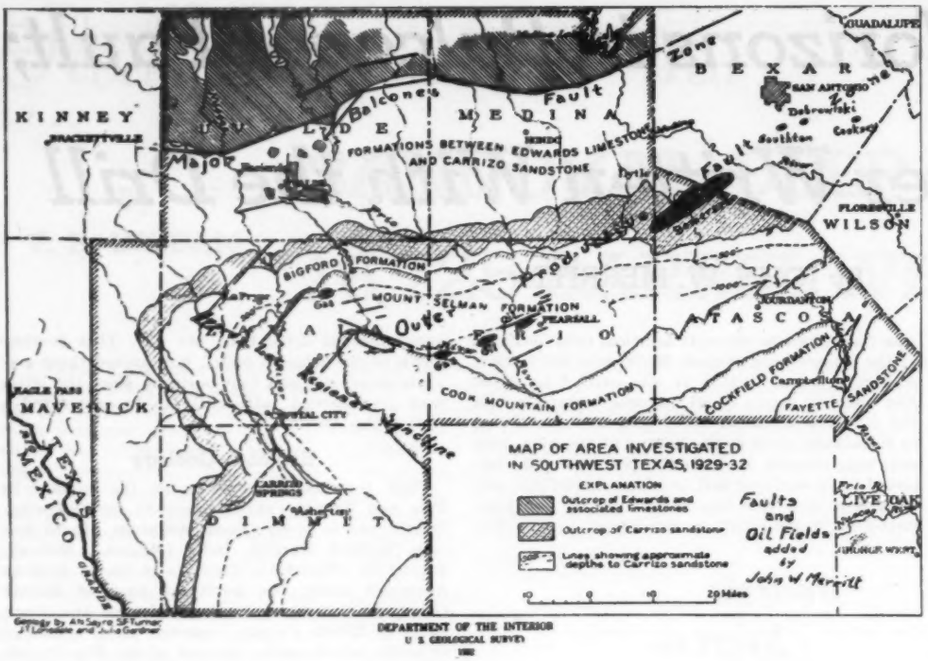
Georgetown-Edwards and Comanche Peak—These formations, consisting of white and gray limestone and occasional shale partings, reach a combined thickness of 800 feet in these counties.

Del Rio—This clay horizon consists of shales, clays and thin beds of limestone. It ranges from 125 to 200 feet thick.

Buda—This is a solid limestone ranging in thickness from 125 to 200 feet, though it probably thickens southward. Measurements here recorded were taken in the northern part of Zavala County and southern Uvalde County.

Eagle Ford—This formation is predominantly shale, black or gray in color, though it also contains flaggy limestone beds and, in the northern part, occasionally Serpentine. This runs from 200 to 450 feet thick.

Austin — Chalk, limestone, argillaceous limestones and shales comprise the formation with the



addition of some Serpentine in the northern part of Zavala County. It ranges from 500 to 800 feet thick, though thicker in the southern part, where it is 900 feet thick.

Anacacho (Taylor)—This formation consists of alternating limestones and shales. In northern part of Zavala County it also carries Serpentine. It reaches a thickness of 500 feet.

Escondido (Navarro)—Alternating shales, limestones and sandstones, with occasionally Serpentine, comprise this formation, which attains a thickness of about 500 feet, and thicker.

Midway—This consists of glauconitic shales, impure limestones, lime concretions and, occasionally, sandstones. It reaches a thickness here between 125 and 350 feet.

Indio (Wilcox)—This consists mainly of lignitic, micaceous sandy shales with occasional beds of calcareous sandstone. Its thickness here is 400 feet to 800 feet.

Carrizo—This is a solid sandstone, running from 100 to 300 feet thick. It is the artesion horizon of western and southern Zavala County in the "Winter Garden" irrigated district.

Bigford—This is a micaceous and gypsiferous shale and clay formation, which often also contains lignite, bentonite, sandstones, lime and iron concretions, and, rarely, glauconite. It reaches a thickness of 700 to 800 feet.

Mount Selman—Here shales, clays and sandstones alternate together with limestones in concretionary form, coal and some glauconite. The thickness of this formation runs about 500 feet.

Cook Mountain—Only the lower 200 or 300 feet of the Cook Mountain may be found in these counties, which portion consists of sandy shales, pure shales and clays containing a limestone carrying Ostrea alabamiensis and other limestones and sandy limestones containing no oysters but with other smaller fossil forms.

Superficial Formations—Lying indiscriminately across the formations from the Escondido upward to and including the Cook Mountain are areas thinly covered by flint gravels. In many places the surface is largely caliche, also.

Accompanying this paper is a geologic section showing these formations graphically together with thickness range. It is plotted on a scale of 100 feet to the inch and shows the maximum thickness. The total thickness averages, from the top of the Georgetown to the eroded surface of the Cook Mountain, as shown in well logs, is 6,400 feet instead of the maximum 7,800 feet as plotted.

Detailed Structure

Structures in these counties range from monoclines, faulted monoclines and terraces, through plunging anticlines to closed anticlines or domes. The reversal of anticlines ranges up to 100 feet or more, at a relatively low dip. Insufficient work has as yet been done to state assuredly the amount of throw of the faults. The faults attain up to 10 or 15 miles in length, though many of them are shorter than 1 mile. The anticlines range up to 10 or 12 miles in length, though usually they are much shorter. They are elliptical to round, where closed forms are found.

Productive Possibilities

The probabilities of production along the trend of faults and structures are good. Whether faulting is a factor in accumulation, or faulting and structure, or structure alone, may not at this early date be stated.

Productive horizons of these two counties, in which oil or gas has been developed in paying quantities, include the Escondido (Navarro), Anacacho (Taylor), Austin, Buda and Georgetown-Edwards. Production from any or all of these horizons may be expected in any favorable structure. The first two are producing from sands and the latter three from limestone. Production already found ranges up to 1,500 bbls. initial daily from the Navarro and 2,400 bbls. from the Buda. Other formations have yielded lighter production.

Accompanying this paper are a map and a vertical section which illustrate, respectively, the areal and vertical arrangement, extent and area.

The writer wishes to acknowledge the use of information provided by Carl Adams, Roy Reynolds, Milo Orr and F. M. Getzendaner.

European Drilling Congress Probably in Paris in 1937

At the Second International Drilling Congress, in Paris in 1929, it was decided the next should be held in Berlin. By reason of the general situation, however, the German national drilling committee had subsequently to give up the organization of this proposed event and suggested that a solution might be found for the organization to be affiliated with that of the Congress of Mines, Metallurgy and Applied Geology. Other national drilling committees, notably Denmark and Holland, agreed with the German suggestion, as did the Rumanian, which also urged that the permanent central organization created in 1929 should be preserved.

At the recent gathering of the Congress of Mines in Paris the opportunity was taken of holding a meeting of the central committee of the International Drilling Congress, and the German proposal was considered. It was agreed it would be preferable in principle to hold any meeting in the future in conjunction with other suitable events, but that the central organization should not definitely ally itself with any one particular body and should continue to maintain the system of national drilling committees acting through a permanent secretary (M. Ernest Renier) at Brussels. It was agreed, further, that as the Second World Petroleum Congress would be held in Paris in 1937, and the French National Drilling Committee would be concerned in the arrangements for its particular sphere, this would be an excellent opportunity for holding coincidently the Third International Drilling Congress, and steps should be taken accordingly.

Edmonton Franchises

EDMONTON, Alberta, Dec. 16.—A project for purchase by the city of the natural gas production and distribution system of Northwestern Utilities, Ltd., has been dropped, and the company has been granted an extension of its franchise to November, 1945. The original franchise, granted in November, 1915, was for 20 years.

Remains of two nitroglycerin trucks blown up at Ward County, Texas, well as it caught fire. Steel from the trucks pierced nearly everything in a radius of 100 yards except the boilers and one tank nearby. Force of the explosion was directed towards the derrick, an exactly opposite direction, thus fortunately missing the boilers

Geologist Predicts Output of Michigan Will be 100,000 Bbls. in Two Years

By DORSEY HAGER
Consulting Geologist

Geologists in Michigan agree 5 to 10 times as many fields lie undiscovered as are producing. The present density of producing fields to the total possible acreage in which fields may be discovered, is as 1 to 1,100, certainly a very low ratio. It should be 1 to 100 or even less—11 times as many oil fields as are at present producing. But, finding new oil fields in Michigan is not easy work. It involves numerous difficulties.

As is well known, central Michigan is covered with glacial drift that varies in depth from a few feet to 1,200 feet in thickness. This drift obscures all the older beds making surface geological work out of the question in most places in the state.

Oil Finding Difficult

The problems due to the drift make oil finding difficult. Three methods of determining anticlines are possible in central Michigan:

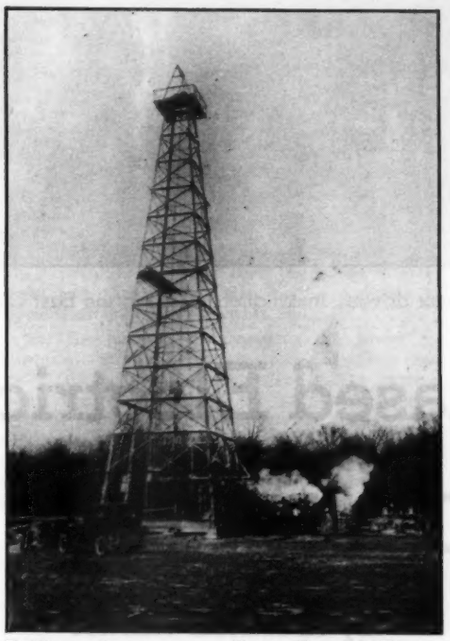
1. Wildcatting without geological guidance with the bare chance of opening an oil field.
2. Determining trends from subsurface data, compiled from well data such as deep dry holes, water wells, brine wells, or shallow test holes drilled to key or marker horizons that can be used by the geologists and,
3. Employing geophysical methods.

Shallow test-hole drilling campaigns have not been systematically carried out in Michigan. The Pure Oil Co., it is true, conducted shallow-testing campaigns and drilled test holes across the state, north and south, east and west, but the wells were so far apart they could easily miss and did miss some of the structural highs since found. A few concerns are now conducting more detailed shallow well testing but such test work is necessarily slow. Given time, such a method will outline all the structural features. However, most of the local oil prospectors are impatient and feel that test-hole drilling is too expensive and too tedious and the best system is to drill a deep hole, which is a far more expensive method. Their impatience costs them money in the long run. The conservative concerns, on the other hand, wait to secure the dry-hole data and also may drill some shallow tests to find key horizons which serve as markers to determine the anticlines. Such a method is slow but safe.

Most oil wells in Michigan are treated with acid. Most of the wells come in flowing in early stages, but when the initial flow has dropped, wells are treated with acid with beneficial results. Recent acidizing of shallow wells in the Trenton formation in southeastern Michigan indicates that the Trenton should be prolific and respond readily to acid treatment.

Torsion balance and also seismograph methods have been used to outline structural trends, and in time they may prove adaptable to this area. Electrical methods, especially the earth resistivity methods also give valuable information. Whether these methods can be used where the drift is 800 to 1,200 feet thick remains to be determined, but certainly it has proved its value in determining structure where key beds can be found at 500 to 1,500 feet under a drift cover of 500 feet and less.

Under present conditions an operator must limit his prospecting to known folds and drilling shallow test holes along them to determine the "highs" or by using the less expensive electrical methods to outline the highs. This last procedure is certainly the most sensible and the most satisfactory. New folds can be determined by following the same methods of using shallow test wells or electrical methods. Anyone operating in Michigan must content himself with a steady, persistent campaign, acquiring all the well data available and correlating it. Then he must supplement such data by shallow test holes and water well data, and use whatever geophysical methods are best. Any oil producer who prospects without geological guidance will succeed only by luck. The chances are all against him unless he selects a productive trend or finds a new anticline.



Drilling discovery well in Crystal Township, Michigan, with rotary outfit

The "hunch" method, the "doodle bug," or "divining-rod" methods, spiritualistic guides, and the arbitrary method of selecting a drill site because a group just want to drill a well at a certain spot, will still be used for there are men who like to follow their hunches and others who are credulous and easily imposed upon. But, such procedures can only be classed as expensive luxuries.

Charles Krause, president, Lee C. Moore Co., and H. R. Leland, Leland Equipment Co.

New oil fields should be opened in Michigan more rapidly now since additional subsurface data is becoming available to outline the structural trends more accurately.

It is not too much to expect production will climb to 100,000 bbls. or more daily in another two years and be maintained at that figure for some years to come. The potential oil fields are certainly here and as more information becomes available they will be more easily discovered.

Comparable to Kansas

There is little chance of the state becoming a second California, Oklahoma, or Texas, as the pay zones are not as thick nor as numerous as in those states. It is comparable to Kansas and given a few years may equal that state in production. Kansas ranks fourth among oil states—Michigan, seventh.

To anyone who intends to search for oil in Michigan, the best advice that can be given is to go slow, get all the information available, and then drill shallow test holes or use the electrical resistivity method or other geophysical methods to determine the anticlines. The two systems may be combined.

Michigan is just at the beginning of an intensive exploration and development campaign, and offers an attractive field for individual oil producers and operators. Wells 3,000 feet can be completed for $12,000 to $15,000. Shallower wells cost from $6,000 to $8,000.

At present cable tools are used almost entirely but the rotary system can be used efficiently here. Obtaining surface muds at the start will be the main difficulty, but once the mud problem is solved there is nothing to check the use of the rotary method.

Leases are taken on the usual Mid-Continent forms with rentals of 25 cents to $1 dependent on the proximity to producing fields. Five-year terms are general.

There is no royal road to the finding of oil and gas in Michigan. There will be numerous new oil and gas fields in the state, but the rewards to those who discover the oil, and the benefits to the landowners will come only through conscientious and skillful searching for new fields. Millions of dollars will be wasted by unscientific, reckless searching for oil, with the large rewards going to those oil operators who follow scientific methods. "Dry" holes will be obtained even when following competent engineering advice, but if the risk, in searching for oil, can be eliminated to 50 per cent, which is very probable, millions of dollars will be saved to prospectors leaving enough to pay substantial dividends to those concerns and individuals who have vision enough to follow technical advice.

Greenville Franchise

MUSKEGON, Mich., Dec. 16.—The Gas Corp. of Michigan was voted a 30-year franchise to supply natural gas to the city of Greenville, Mich., by an overwhelming majority in a special election recently. The company is planning to pipe gas from Winfield Township, Montcalm County, near Howard City, where a discovery gas well of about 8,000,000 feet daily was encountered some months ago but drilled to the Dundee searching for oil. A new test recently has been started to be drilled to the Michigan Stray gas sands to provide a supply for Greenville.

Light oil pump house, each unit of which is motor driven. Installation made in the East Chicago plant of Empire Oil & Refining Company

Use of Purchased Electric Power in Oil Refining Offers Many Economies

By RICHARD HENRY
Empire Oil & Refining Co.*

The scope of this paper is to point out the practicability and economies of the use of power, particularly purchased electric power, in oil refining. No attempt has been made to go into the design of electric equipment, except in a general way, to show where recent developments have overcome certain obstacles which formerly prohibited the use of electric equipment in refineries. The actual details and fundamentals involved in various equipment designs are matters which can best be handled by equipment manufacturers; furthermore, each phase of the petroleum industry has its own problems in the use of electric power, and this paper does not cover this subject except from the standpoint of refining.

Started Slowly

When the oil refining industry was in the early stages of development, the use of electric power was extremely limited. This was due in a large part to the following reasons: First, changes in refinery practices were occurring with considerable rapidity and a great many operations were carried on in an experimental fashion. Consequently, it was difficult to design any facility to operate on a permanent basis. The equipment in general, and that in particular which required some prime mover, was selected with the idea in mind of providing the maximum flexibility from the standpoints of capacity and duty. This naturally resulted in almost exclusive use of steam for power purposes as a certain amount of process steam was required anyway. Second, the matter of mechanical efficiencies was something which was given very little consideration, and the mere fact that the refiner's operating costs were somewhat higher than they should be was of little consequence. Third, the trend at that time was to erect refineries in the vicinity of crude production, as the crude transportation facilities as we know them today were then nonexistent. These refinery locations were frequently far removed from transmission lines and the power companies were naturally hesitant about installing power services due to apparent small sales potentialities. Fourth, the power companies did not have adequate facilities to provide continuous satisfactory service, and the refiners could not depend upon them for uninterrupted service which was then and still is, perhaps, the most essential requirement in the use of purchased electric power in refineries. Fifth, power rates were high, and there had to be some very definite advantages and reasons for using electric power rather than steam power in order to justify paying the rates demanded. So, with the circumstances as they were, little or no effort was made to justify the use of electric power. Likewise, the power companies could offer little sales argument for the use of electric power because they were not familiar with the power demands of refineries.

Now, if we review these factors in the light of present-day conditions, we find an entirely different picture. In the first place, we find that the refining industry has become stable, or, at least, it is more stable that it has been at any prior date. Operations are carried on in a definite manner, new installations and designs are based on proven facts, and practically all experimental work is done with experimental equipment and not with commercial installations. This does not mean that development has been arrested in any way, because there is a tremendous amount of it going on all of the time, and there will continue to be just as there is in any industry. In general it can be said, however, that conditions are now such as to make it a comparatively simple matter to analyze the power requirements of a complete plant or some part of a plant to determine what kind of power is most suitable, and how that power can best be obtained.

Stabilization of the oil industry and improved refining methods have lead to greater utilization of electrical equipment as a processing medium in refineries. Advantages and disadvantages of using electric power as compared with steam power for refinery use and improvements in electrical equipment discussed.

Efficiency Conscious

Next, we find that the refining industry has become efficiency conscious; consequently, it is necessary that every piece of equipment be of the type which can be installed and operated most economically and satisfactorily. This has resulted in a wide use of electric equipment for those duties where electric equipment is most suitable.

And finally, we find that the power company's transmission facilities are now so widespread and efficient that practically uninterrupted power service is readily available at almost any locality. This feature, and the fact that rates have been reduced to where they are attractive have been most important in promoting the use of electric power in refineries.

Due to the large variety of oil refineries existing today, it is almost impossible to arrive at any average figures for the power requirements of a refinery of some given capacity. Each plant is different in some respects to every other plant. To what extent power of any kind is used depends upon many things. Some of these may be enumerated as follows: Type of crude, capacity of plant, kind of equipment in service, state of moderniza-

*Presented before Dallas meeting Electric Power Club.

tion, products, and local conditions. In order, therefore, to give you some idea of how much power is required, where the power is used, and what kind of power is most suitable, I have chosen as examples two refineries which may be referred to as typical plants. The reason two plants have been selected instead of one is because one of them will include lubricating oil facilities, whereas the other will not.

One of these plants which we may call the first typical plant is one having a crude capacity of approximately 23,000 bbls. daily, and is classed as a skimming and cracking plant, that is, its production consists primarily of gasolines and fuel oils. A few power details for this plant will be given and then a comparison made with the second plant to show the effect of lubricating oil facilities on power requirements.

The power required in a plant of this kind can probably best be expressed in terms of pounds of steam and kilowatt hours, but before going into the requirements, it is advisable to mention the various uses for which power is needed. These uses may be listed as for lights, cleaning, driving mechanical equipment such as pumps, compressors, fans, mixers, tools and shop equipment and machinery in general.

The figures and quantities mentioned below may be considered as fairly representative averages, but nevertheless, are subject to approximately 30 per cent variation either upward or downward, depending upon the particular plant, the operating conditions and the amount of throughput. The process and heating requirements for a plant of this kind are approximately 50,000,000 pounds of steam per month. Sixty per cent of this quantity is needed for processing, and the remaining 40 per cent for heating. There is no necessity for this steam to be greater than 10 to 15 pounds pressure, as low pressure steam is entirely suitable for these duties. Due to the fact that it costs so little more to manufacture this steam at 150 to 175 pounds or even higher, it is most economical to do so, using the high-pressure steam for power purposes and using the exhaust for processing and heating. Because of this basic requirement of 50,000,000 pounds per month, there is this quantity of high-pressure steam available at a very economical cost. This is steam power which cannot under any conditions be economically replaced with electric power, and which is adequate to drive mechanical equipment requiring approximately 1,000 horsepower. Approximately 35,000,000 pounds of this low-cost power steam can be readily used, not only because it is economical from a cost standpoint, but also because it provides flexibility and better operation on certain equipment. The remaining 15,000,000 pounds can be economically used for power purposes on duties which could be handled satisfactorily by either steam or electric power.

The matter of flexibility is something which is mentioned from time to time in this paper. In general it can be said that flexibility is of the utmost importance on those pumping duties which are integral parts of some process. In this plant this applies particularly to the crude, rerun and cracking units, which at various times run on different charging stocks, under different conditions and at different capacities. Even if the low-cost steam, mentioned above, were not available, it would be imperative in most plants to manufacture steam for these duties in order to insure satisfactory operation, which would be difficult to obtain with electric motor drives.

Steam Requirements

In addition there is approximately 25,000,000 pounds of high-pressure steam required per month for cleaning and miscellaneous uses. This makes the monthly steam requirements of this plant total 75,000,000 pounds, 60,000,000 pounds of which could not be replaced by electric power either practically or economically, and 15,000,000 pounds of which could be replaced by electric power practically, but not economically.

The additional power required in this plant for other duties approximates 1,000 horsepower, and is that power needed for lights and for driving pumps, compressors, and mechanical devices of various kinds, which are not integral parts of processes, but which are operated almost continuously under uniform conditions. With the exception of lights, small drivers, and drivers in outlying locations, all of this load can be practically handled by steam power as well as electric power, and the choice can be made strictly on an economic basis. Because of attractive rates, the choice of this particular plant has been purchased electric power and the average monthly consumption is approximately 560,000 kilowatt hours.

For the purpose of comparing the power requirements of this plant with those of the second typical plant, it will probably be best to express these requirements on a per barrel throughput basis. It is, therefore, found that the steam power requirements of this first typical plant amount to 110 pounds per barrel of crude run, and the purchased electric power requirements are eight-tenths of a kilowatt hour per barrel of crude run.

The second typical plant is one having a crude capacity of approximately 9,000 bbls. daily, and is classed as a skimming, cracking, and lube oil plant, that is, its production consists primarily of gasolines, fuel oils, and lube oils. The nonreplaceable steam power requirements of this plant are 65,000,000 pounds per month, and the additional power load required approximates 1,500 horsepower. Two hundred of this 1,500 horsepower must be supplied by steam power because of the necessity of flexibility or because of economics, or because of both; therefore, the total monthly steam power requirements are 77,000,000 pounds and the total additional power needed is 1,300 horsepower. As in the first typical plant, purchased electric power was chosen for this load and the average monthly consumption approximates 770,000 kilowatt hours.

On a unit basis, the steam power requirements of this second typical plant which includes lubricating oil facilities amounts to 285 pounds per barrel of crude run, and the purchased electric power requirements are two and eighty-five hundreds kilowatt hours per barrel of crude run. Considering that the second typical plant maintains a lower steam pressure than the first, and has a less efficient steam distribution system, it is concluded that the addition of lubricating oil facilities approximately doubles the amount of steam power required and triples the amount of electric power required.

In all refineries, such as the two typical plants just discussed, there are a certain number and quantity of so-called waste fuels produced. These products are commonly classified as coke, unsalable fuel oil, acid sludge, and refinery gas; and they must be disposed of in some manner.

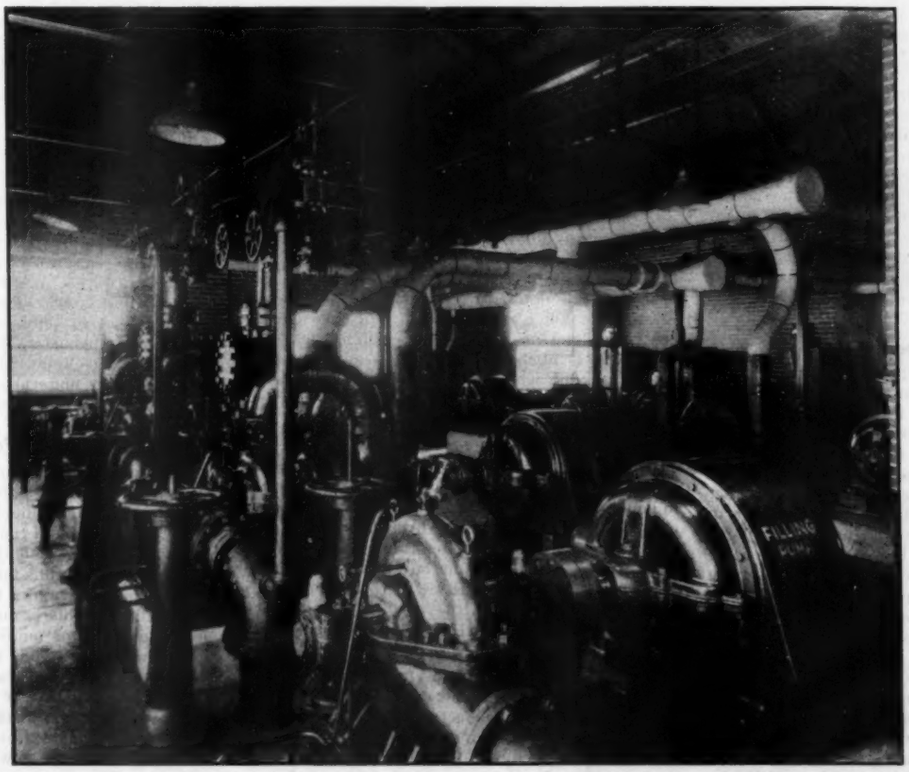
There is usually a ready market for coke and generally this material can be sold for a price which makes it uneconomical to attempt to burn it as refinery fuel. It can be burned, or course, under boilers, providing the necessary firing facilities are installed, but this practice is objectionable because of the availability of other fuels which can be handled so much easier and conveniently, and because a refinery is usually so compact and so congested that it is very expensive to handle fuel in solid form.

Unsalable fuel oil and acid sludge, which is also unsalable are two products which get first call as refinery fuel. The reason for this is that it is very difficult and expensive to dispose of this kind of material in any other way.

Refinery gas which is the most convenient and easiest to handle is used as refinery fuel after all unsalable fuel oil and acid sludge has been disposed of. Oftentimes, it is possible to sell all or at least the excess refinery gas at a fairly attractive price. In the event that it is impossible to dispose of the excess by using it as fuel or by selling it, it becomes necessary to burn it at a flare. Although the gas is a total loss in this case, the cost of disposal is nothing.

In the first typical plant all of the coke is sold, all of the unsalable fuel oil and acid sludge is burned and a portion of the refinery gas is burned. The remainder of the refinery gas is sold, otherwise it might be advantageously used to generate steam power which would replace purchased electric power, or it might possibly be used to generate electric power. In the second typical plant all of the coke is sold and all of the other three waste fuels are used as refinery fuel. The waste fuels available are not quite sufficient to supply the plant fuel demand making it necessary to furnish the plant with a small amount of salable fuel. The explanation for this condition is that the lubricating oil facilities consume considerably more fuel than is produced as waste by these facilities.

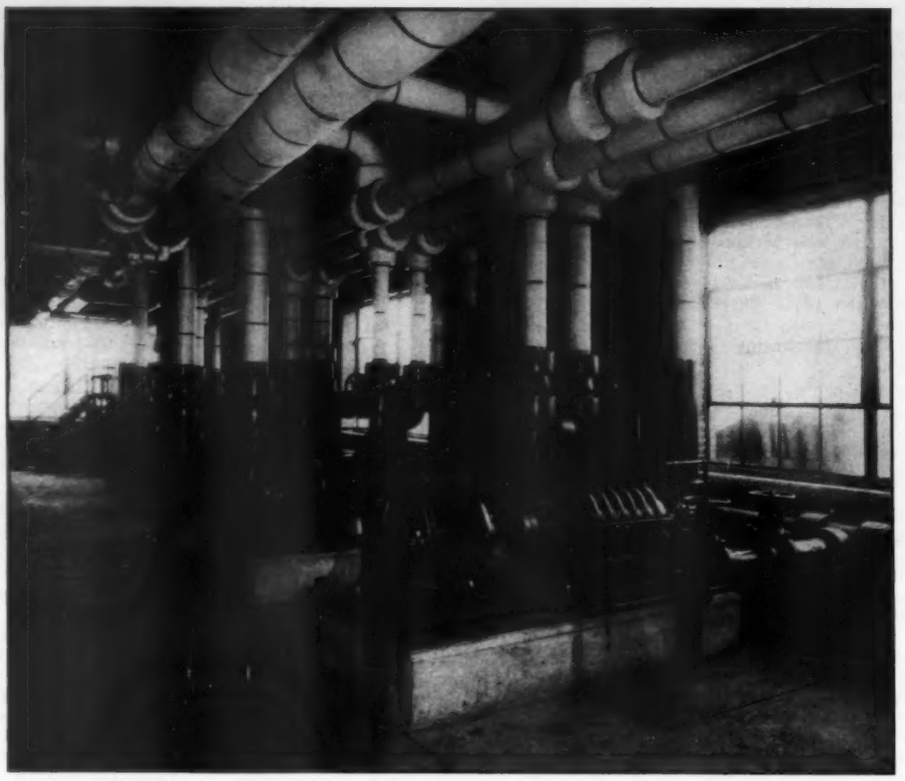
To sum up the subject of waste fuels, it can be said that excess waste fuel is one of the primary factors to be considered when a choice is



Main pump room in the cracking plant of the East Chicago refinery of the Empire Oil & Refining Company in which motor powered units are used

being made between steam power and purchased electric power for those power requirements where either can be used practically.

The purchased electric power requirements of the two so-called typical refineries mentioned above would not be nearly so great if it were not for recent developments in electric equipment. Perhaps the most important of these recent developments has been that of explosion-proof motors and switches. The availability of such equipment has made it possible to utilize electric power almost exclusively in case it proves economical on lubricating oil plants where formerly it was prohibited because of the danger of disastrous fire from motor or switch flashes. This hazard is due to the presence of explosive vapors which heretofore it has been impossible to prevent from escaping in greater or less degree. Incidentally, practical means have recently been developed to almost entirely prevent the escape of these vapors which not only eliminates the fire hazard, but also eliminates the loss of the vapors. In spite of this, however, there is still a potential hazard and the necessity for explosion-proof equipment is by no means lessened.



Boiler water and filter wash pumps individually powered by electric motors to attain maximum flexibility in the normal operations of the East Chicago plant

Another development which has made possible the use of additional electric power in refineries is that piece of equipment commonly referred to as a gearmotor. The construction of this equipment is such as to make it much cheaper in cost than a separate motor and reducer or increaser. Other distinct advantages of such a compact unit are cheaper installation cost and smaller space requirement. These factors frequently are of sufficient importance to make an electric drive more economical than a steam drive.

Still another development along this same line is that of the combined centrifugal pump and motor unit which provides the same kind of advantages as the gearmotor. It is recalled that when this development was first placed on the market it was available only with an open type motor. The manufacturers quickly realized that its use in refineries would be seriously restricted if it could not be furnished with explosion-proof motor. Consequently, it was immediately made available in either type.

Variable-Speed Motor

The most recent development which promotes the use of electric power in refineries and which should be of considerable interest to refiners is that of an efficient and practical variable speed motor, commonly referred to as a brush-shifting motor. This motor has the advantage of an infinite number of speed points over a wide speed range and high efficiencies at all speeds. A number of these motors have been installed in several plants as drivers for centrifugal hot oil pumps serving cracking stills. This is a duty which requires from 500 to 700 horsepower depending upon the size of the still and the method of operation. Originally, this duty was handled exclusively by steam reciprocating surge pumps due to the necessity of varying pumping rates and due to the fact that centrifugal pumps had not been developed for hot oil service. After the development of suitable centrifugal pumps, it was still necessary to drive them with steam turbines to obtain the required flexibility. In addition to this motor's adaptability as a centrifugal pump driver, it should also find uses on power pump applications.

Although there is a definite need for a motor of this type, there are some disadvantages which cannot be ignored. One of the most important of these is the extremely high initial cost. On a horsepower basis this equipment costs approximately three times as much as the conventional type motor. Also the maximum speed for which these brush-shifting motors have been built to date is around 1,000 to 1,200 r.p.m. which limits their use to some extent unless speed increasers are provided. Furthermore, it is found that centrifugal pumps generally do not perform satisfactorily when there is an appreciable quantity of coke in the material to be handled. This automatically eliminates the possibility of using this kind of pumping unit on those cracking units which are run to coke, unless the coke can be satisfactorily screened out before it reaches the pump. A very important factor concerning the application of a motor drive to cracking unit hot oil pumping which does not strictly apply to this new type motor, but applies to any kind of motor drive, is the necessity for taking care of emergency shutdowns because of power failures. An emergency shutdown of a cracking still not only results in complete loss of production, but also extremely high coke cleaning costs. As long as there is a possibility of power failure, it is almost imperative to install a steam driver standby which, of course, increases the initial costs which in turn makes the electric drive more difficult to justify.

The cracking unit hot oil pumping duty requires, perhaps, the greatest amount of power of any single duty in a refinery. It is believed that in general operations will be more satisfactory and more economical from an overall standpoint if steam power is used instead of electric power. Whatever economies might be shown by a motor drive would be in most cases more than offset by inflexibility just as is the case on other power duties which are integral parts of processes.

In regard to future electric equipment developments which would promote further use of electric power, I do not know of any specific power applications where the electric equipment available now could not be used if it fits into the operating conditions satisfactorily. It happens that the equipment problem is one of improving the equipment now developed and making it available at a reasonable cost.

The purchased electric power consumed in the two typical plants previously discussed, or in any plant, is used because there is some definite advantage or advantages over steam power. The first of these advantages may be described as a combination of simplicity, small space requirement, and low purchase and installation cost of electric power equipment. These factors are of immense importance in refineries where, in general, equipment is massive, complicated, and congested. A second advantage is the low maintenance expense required by an electric drive. A motor operating under normal conditions has a life of many years, during which time there are little or no repairs required. A third advantage is that of high efficiency. The efficiency obtained from steam drivers cannot approach that obtained from electric motors.

On the other hand, there are some definite disadvantages to the use of electric power, particularly purchased electric power. Perhaps the most important of these is the matter of service. I do not believe that too much emphasis can be placed on the necessity for uninterrupted service. Forced shutdowns from other causes are frequent and costly enough, without having to contend with additional ones because of power failures. This is a disadvantage which applies not only to purchased electric power, but also refinery-generated power.

A second disadvantage in the use of electric power is the lack of flexibility, which has already been mentioned several times. The flexibility required in process work has been discussed, but in addition to this there are quite a number of pumping duties which cannot be handled very satisfactorily nor economically with electric power. These may be classified as transfer or miscellaneous duties, and consist for the most part of transferring various products from one plant locality to another, or from the vicinity of one facility to that of another for further processing or handling. As one pumping unit usually handles several different duties, it is apparent that the pumping conditions change over a wide range with the different duties, making the use of centrifugal pumps impractical and inefficient. In addition, there are other pumping duties involving the unplugging of coked-up lines, the handling of very light products under high pressures, and the handling of dirty materials which can best be handled by steam-driven reciprocating pumps.

Do Not Forget the Bill

There is another factor which always has and always will make purchased electric power unattractive to oil refineries, and I presume to every other consumer, and that is the bill which comes in the first of every month. For a plant of any size, the monthly bill runs into several thousand dollars, and is classified under the heading of cash outlay. As you know, this is an item which has been subjected to a lot of punishment, particularly in the past few years. It has not been unusual for some project of a more desirable design to be cast aside for one not so good, for the simple reason that the latter required a substantially lower cash outlay. This factor is one which applies directly to the purchase of electric power and is a problem which will always confront the power companies.

The cash outlay required for the purchase of electric power and the unavoidable production of

waste fuels are the two primary factors which make refiners give serious consideration to the possibilities of generating their own electric power. It is rather difficult to discuss power generation in a general way, as each plant has a separate and distinct problem of its own. The savings or return which can be realized from a generating plant investment is dependent upon the type and size of plant, available equipment, quantity of power required, amount and value of fuel which can be utilized, existing power rates, and perhaps still other factors. All, or at least most, of these factors are different for different plants.

It is possible for refineries to generate their own power by means of diesel engines, gas engines, steam turbines, and gas turbines. Diesel and gas engines can probably be justified in some plants where the power requirements are small and where boiler capacity is inadequate for generating power; but they can rarely be justified in large plants where a number of large units are required because of the high initial costs. Even if power can be generated by means of engines at a lower cost than it can be purchased, the fixed charges incident to the high investment costs make such a project unattractive.

Bleeder-Type Turbines

Usually the best means of producing electric power is by the use of bleeder-type turbines supplied with steam at a pressure of 400 pounds or more. Steam manufactured at this pressure can be used for both power generation and plant requirements. The method of operation is to supply the generating turbines with high-pressure steam and take a bleed off at 150 to 250 pounds for plant use. In other words, the generating turbines utilize a steam pressure drop ranging from 150 pounds upward. This means that the actual cost of generating power is only the difference between the cost of generating high-pressure steam and plant steam. This actual cost is very small, but it is absolutely necessary in this case to install the so-called high-pressure boilers if they are not available, and this usually increases the investment costs to a figure which makes it impossible to justify the project.

The last means listed above for generating power is by means of gas turbine-driven generators. Like steam tubbines, these machines operate on the pressure drop principle. Power is derived by utilizing approximately a 100-pound pressure drop on the gas produced from cracking stills. Usually such a drop is taken anyway before this material is processed through an absorption plant. The advantage in this kind of equipment is that it costs nothing actually to produce power. The disadvantages are that the supply of gas fluctuates over a wide range with zero minimum, and the amount and pressure drop of the gas is sufficient to supply only a portion of the power required by the plant. One such unit of this kind would probably fit in very nicely with a steam turbine generating scheme and would tend to improve the overall cost picture from an operating standpoint.

The principal objection to a refinery installing an electric power generating plant of any kind is the large initial investment required. The high initial cost is due largely to the necessity for installing sufficient capacity to take care of peak demands and breakdowns. The cost of standby equipment alone normally represents approximately 30 per cent of the entire cost. The high initial cost is not objected to strictly because of the expenditure required for the purchase and installation of equipment, but also because of the fixed charges which must be considered in the same category as the power bill.

If a new refinery is being erected, or if an existing refinery is having its boiler facilities substantially expanded, electric power generation facilities can probably be justified and a reasonable savings or return realized. If neither of these conditions applies, an economical justification would rarely prevail unless the average rate of purchased electric power exceeded a range of from 8 mills to 12 mills per kilowatt hour. This might be classed as a border line rate range. In other words, refineries paying a rate within this range are constantly analyzing the possibilities of generating their own electric power, some of them concluding it would be profitable and others finding it not profitable. This means that any appreciable rate increase or decrease would have a corresponding effect on power generation possibilities.

In the early part of this paper I mentioned the matter of developments in the oil refining industry. This is a subject which you are undoubtedly interested in from the standpoint of how much electric power would be required.

Polymerization

The most recent development which is commanding the attention of those interested in oil refining is that of polymerization. In brief, polymerization consists of processing refinery gases, which have been previously described as waste gases. The product obtained from this process is a gasoline of high octane, ranging from 85 to 100, and is used exclusively for blending purposes to bring up the octane on regular gasoline. In other words, it is used for the same purpose as Ethyl Fluid. There are several different patented processes on the market, the details of which are not readily available. The equipment required can probably best be described as similar to that used in cracking stills. As in all developments of this kind, there will probably be considerable patent litigation which will serve to delay any wide adoption of this process.

The amount of gasoline which can be obtained from a polymerization plant is exceedingly small, being only about 6 gallons from every 1,000 cubic feet of gas. The recovery is even smaller, if the gas available contains insufficient percentages of the required hydrocarbons. Due to the recovery which may be expected, it is apparent that these plants can be justified only at those refineries where there is a fairly large quantity of suitable gas available. At the present time it seems to be the general opinion that these plants would not be economical investments in those refineries having cracking capacities of less than 7,500 bbls.

The direct effect that polymerization will have on increased consumption of electric power is rather difficult to prophecy. So far, this development has been studied more from an economic standpoint than from an equipment standpoint.

There are two kinds of polymerization plants, one of them being a catalyst process and the other a thermal process. As the name implies, the first one operates on the catalytic agent principle. With the details available it is impossible to say what the power requirements of such a plant might be, but judging from other catalytic processes, it is likely that they will be very small. The thermal process, of course, operates on the principle of heat and pressure .The charge gas is first compressed to a liquid and then pumped to the unit, which operates at a very high pressure. Due to the lightness of the material and the high suction and discharge pressures, this duty will probably require the use of a reciprocating pump. A power pump should fit into this kind of service very satisfactorily, and if varying rates of charge are necessary, consideration will undoubtedly be given to the use of the brush-shifting motor mentioned earlier. This duty represents quite a nice block of potential power, as an average size unit would probably require around 300 to 400 horsepower.

There is also an indirect effect that polymerization will have on the consumption of electric power, and that is such a process uses up approximately one-third of the gas charged to it. This means that there will be much less waste gas available for steam power.

Solvent Plants

Another recent development which is further advanced than polymerization is that of solvent treating and solvent dewaxing of lubricating oils.

A solvent dewaxing plant is a complete lubricating oil plant suitable for installation in those refineries which have no lube oil facilities, such as the first typical plant mentioned earlier. A complete new plant, of course, can be designed on a basis of fairly uniform operations and under these conditions considerable electric power can be utilized to good advantage. I should say the electric power requirements for a solvent dewaxing plant of the same capacity as the lube plant in the second typical refinery mentioned above, would be approximately 25 per cent less due to more compact design.

Still another development which has just reached the patent stage is one which involves the use of an electric arc for cracking petroleum products. So far as I know, there has never been any commercial or even large-scale experimental installation made of such a process, although several patents have been applied for. What the future holds in store along this line remains to be seen.

In summing up the future development situation, it appears that there are several things on the horizon which will promote substantial increases in the use of purchased electric power. Furthermore, there will be expansion and additional developments which have not yet been conceived.

In the oil refining industry, every phase of operation and procedure is very closely interconnected with various other factors, and it is difficult to discuss any one particular subject without touching upon many others. In attempting to analyze any given problem, it is almost always necessary to cover a variety of subjects and conditions in order to arrive at any definite conclusion. Changes in base products, crude prices, market prices, schedules, demands, and many other factors have their effect on analyses almost from day to day. Consequently, I have perhaps frequently digressed from the subject of this paper, but in doing so I have attempted to cover, with a minimum of figures and statistics, some of those items which I thought would be of interest to you.

Electric motors supply the power for processing the light oils through the treating plant. All pumping of gasoline, kerosene and naphtha through the treaters is centralized

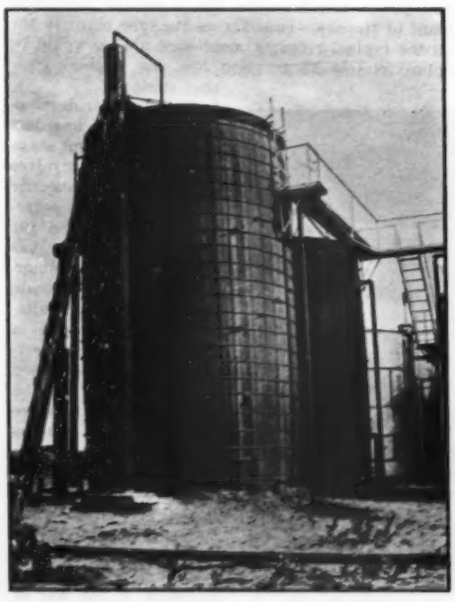
Avoiding Emulsion Formation Is First Step in Solving Treating Problems

By R. G. RALPH
Chemical Engineer, Phillips Petroleum Co.

This paper will not concern itself with the many different theories of emulsions. Sufficient it is to say the more generally accepted theories contend any emulsion contains two or more liquids and an element termed the emulsifying agent. The emulsifying agent bonds itself around the liquid in the dispersed phase and prevents one liquid from settling from the other. If there is no emulsifying agent present then an emulsion may not be formed.

In the case of crude oil emulsions the two-phase liquids are, of course, crude oil and water. The emulsifying agent may be a number of different elements, the most common of which are: microscopic paraffin flakes, asphalt particles, clay or earthy matter, certain heavy hydrocarbons or carbon. All forms of treatment of crude oil emulsions aim to eliminate, destroy or neutralize the properties of the emulsifying agent. From the large number of possible emulsifying agents, a large number of different crude oil emulsions arise which require different methods of resolution.

Although crude oil, water and an emulsifying agent are present, it does not mean we have an



14x24 ft. wood treating tank with outside boot. Also 14x20 ft. wood settling tank

emulsion. It is only after more or less vigorous agitation of the two liquids and the emulsifying agent that an emulsion is formed. Crude oil and water probably never occur in the producing formation in an emulsified state. It is only after the liquids enter the well hole that emulsification occurs.

The agitation necessary to form most crude oil emulsions is produced by gas vigorously bubbling through the crude oil and water or by the two liquids being forced through relatively small openings at high velocities. Notable cases of gas agitation are: natural flowing wells, gas-lift wells and pumping wells which "flow off." Common examples of high velocity agitation are: creased cups, leaky balls and heats, leaky tubing, chokes or too small lead line.

Oil emulsions are formed in the well and do not occur naturally in the crude. After all means have been used to avoid the formation of emulsions, a specific study must be made of each well or pool to ascertain the most economical chemical treatment to treat that particular emulsion.

Too little attention is given in a number of our districts to the elimination of the controllable factors responsible for the formation of emulsions. Each pumper or switcher should have a centrifuge machine available and know when and to what extent a certain well is emulsifying its oil. In this manner he will be in a position to make recommendations as to the time when well equipment should be reconditioned.

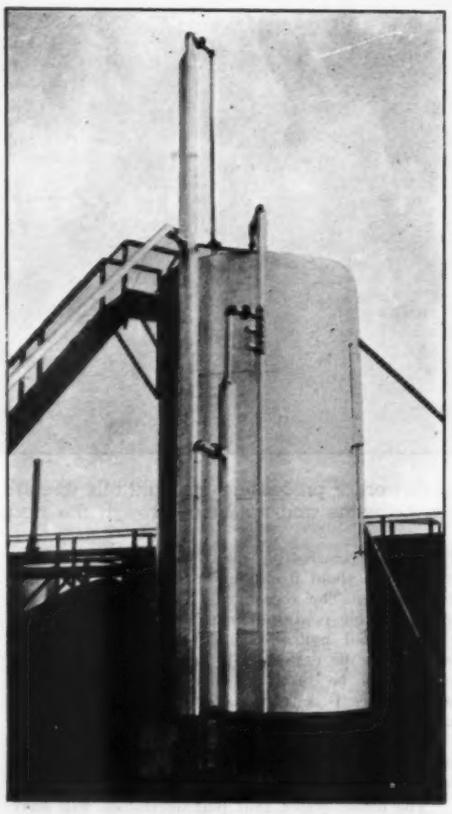
1. Electrical. This method of resolving emulsions at present is not being used by this company. The method apparently has its best application in the "breaking" of asphalt base crude oil emulsions. This method, while not used extensively in the Mid-Continent, is quite common in the Gulf Coast and California fields.

2. Mechanical. No purely mechanical method is used to resolve crude emulsions at the present time.

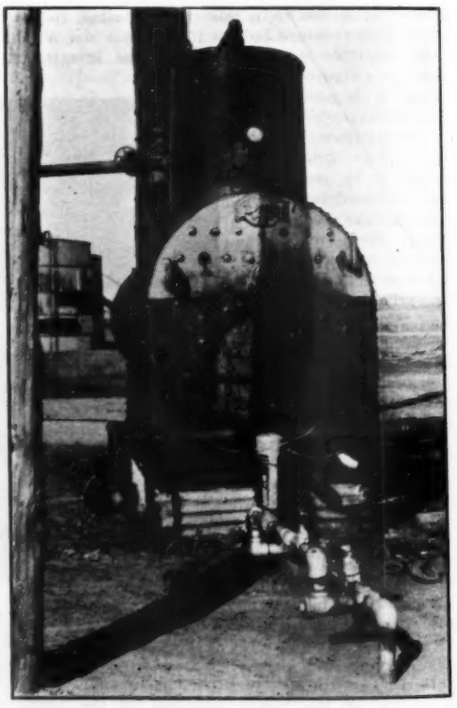
3. Chemical. This is the method in which we are especially concerned in the Mid-Continent. The main factors involved in chemical treatment are: (a) A sufficient amount of the proper treating chemical; (b) sufficient agitation; (c) heat is sometimes required; (d) water wash is at times helpful.

1. Proper chemicals. As has been stated, different emulsions have different emulsifying agents. Thus different chemicals are required to "break" different emulsions. The proper chemical for a certain emulsion may be efficiently determined by an intelligent interpretation of laboratory tests.

2. Proper application of treating chemicals. The common methods of introducing treating



Oil treating receiving tank of 315-bbl. capacity showing outside boot and automatic pressure and vacuum proof syphon



Front view oil treating boiler heater showing thermostat temperature control hookup

chemical into the crude oil system are: down hole, lead line or tank.

Down-hole introduction of the treating chemical on certain type wells has proven very advantageous. This method has as its theory: "It is easier to prevent an emulsion being formed than it is to "break" the emulsion after it is formed." The treating chemical is added to the annular space of the well and thus is added to the crude oil and water before agitation by producing equipment can emulsify the liquids. In certain cases down-hole

treating has eliminated the necessity of using surface-heating systems to "break" the emulsion. In certain other cases down-hole treatment has resulted in the elimination of scale formations on the producing equipment. This company at present is treating approximately 16 per cent of its emulsions by down-hole methods. Down-hole treating is limited in its application in that the chemical will not fall in a well that makes considerable casing-head gas, the chemical being carried away with the gas stream.

Lead-line addition of treating chemical is the common method of introduction. Almost without exception the proper point to add the treating

Oil treating plant, Oklahoma City. Rear view of boiler heater with overhead oil line shown

chemical to the lead line is as near the well as possible. By adding the chemical at the well a maximum of lead-line agitation may be had before the well fluids enter the treating system proper.

Addition of chemical to a tank and the subsequent treatment of the emulsion in the tank is not recommended except in case of emergency. When chemical must be added in tanks, the tank should always be rolling while chemical is added. The chemical should be added in a fine stream, preferably through a perforated screen, to make certain the chemical, which is heavier than the crude oil, does not settled to the bottom of the tank before mixing with the oil.

After chemical is added either down hole or lead line, the flow of the production, through the well or surface lines, agitates the emulsion. In most areas there has been a sufficient amount of agitation of the emulsion with the chemical to "break" the emulsion by the time the fluids reach the treating system. However, in certain areas, the emulsion requires a greater amount of agitation than is supplied by the fluid passing through the lead lines. In these areas (the most notable of which are the Panhandle and Jal areas), the first tank in the treating system is used in the capacity of an agitating tank. The fluid from the well enters this agitating tank through a spreader 3 to 5 feet from the bottom of the tank. There is no gas separator or "boot" between the well and the spreader in the agitating tank. The oil-water contact level in the tank is controlled by an automatic water control below the spreader. The gas coming through the lead line with the crude oil and water agitates the tank continuously and as a rule supplies sufficient agitation to "break" the emulsion. However, if there is an insufficient amount of gas coming through the lead line with the fluids to give the proper agitation, an additional agitation is effected in this tank by means of a gas spray connected to the lease gas supply. This spray is placed in the tank at the same level as the spreader. The oil leaves this tank approximately 4 feet from the top and gravities either to a settling tank or to the stock tanks.

On the majority of our leases, the emulsion from the well has received sufficient agitation by the time the fluids reach the treating system. In this event the gas is removed from the oil and water by means of a gas separator or "boot." From the "boot" the gas vapors are conducted overhead to the vapor space of the wash tank. The oil and water are conducted down the boot and into the wash tank through a spreader. This spreader is located from 1 to 2 feet above the bottom of the tank. Depending on local conditions, there are from 7 to 17 feet of water carried in this tank. The oil, entering the spreader in the bottom of the tank, must wash up through the water. This tank remains quiet at all times.

After the emulsion is "broken," the "free" water must be removed from the oil before it meets pipe-line requirements. The most common method of removing the "free" water is to let the broken emulsion remain quiet for an extended period. In many cases, the oil remains in the first treating tank for a sufficient period to allow all free water to settle from the oil. In this case no settling tank need be installed in the treating system. In cases where free water is "carried over" with the oil from the first treating tank a second tank should be installed. The oil and free water enters this second tank through a spreader from 2 to 6 feet above the bottom of the tank. The water level in this tank is controlled below the spreader. Crude oil gravities from this tank to the stock tanks.

There are special cases wherein the water is so finely divided in the oil that after the emulsion is broken the water will not settle from the oil. For these special cases the gravel and excelsior tanks were developed. These tanks have gravel or excelsior beds from 2 to 8 feet thick through which the oil carrying the finely suspended water must pass. The finely divided droplets of water cling to the gravel or excelsior until a large drop of water is formed. The large drops of water fall through the oil to the bottom of the tank, there to be removed.

Heating is employed in the treatment of crude oil emulsions for various reasons:

1. Helps complete the breaking of the emulsion. As a general rule emulsions should be "broken" at lead-line temperatures. It is a fact most emulsions require less chemcal when treated at lead-line temperatures. However, in certain cases (mainly in the Oklahoma City field) besides chemical, relatively high temperatures are required to dissolve the emulsion. The reason elevated temperatures are required to "break" the Oklahoma City emulsion is presumably due to the emulsifying agent being finely suspended paraffin particles. Heat melts the paraffin particles and this destroys the emulsifying agent.

2. Helps settle the "free" water. The viscosities of crude oil and water are reduced by heating. Thus, when heated, finely divided "free" water will settle more rapidly by gravity from the crude oil.

3. Helps eliminate paraffin bottoms. A great many of our wells produce paraffin flakes, which if no heat is applied, carry through the treating system and slowly build up paraffin bottoms in the stock tanks. Proper control of heat will minimize or eliminate these paraffin bottoms.

1. Boiler heater. This heater is made from junk steam boilers. As a rule this type of boiler heater is placed so the total fluid from the well is heated as it passes through the boiler before it enters the treating tanks. This type of installation is very efficient and long lived. It is desirable in

Oil treating chemical pump mounted on derrick corner. Chemical is injected into casing above master gates to insure thorough mixing

most cases to have a thermostat control the heat within the boiler to the most effective treating temperature. When replacement of flues becomes necessary in a treating boiler, very satisfactory flues may be made of 4-inch line pipe, electrically welded into the flue sheet.

2. Ground heaters. One type of ground heater is placed so that the total fluid from the well must pass through the heater before entering the treating system. This type of heater is usually very wasteful on gas and as a rule has a capacity so small it is very difficult to control the temperature of the fluid passing through.

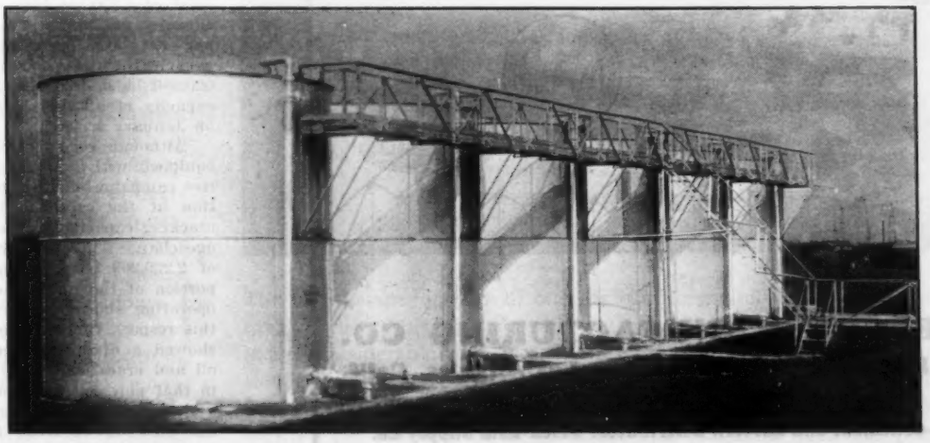
Another type of ground heater is installed so that by a thermo-siphon action the water in the wash tank may be circulated through the ground heater. This type of heater has proven successful to a certain degree in some areas.

Another type of ground heater is so installed fresh water may be circulated by thermo-siphon action in a closed system through the heater to a drum coil inside the treating tank and thence back to the heater. This system is used in areas in which the brine produced by the well is very corrosive to iron when heated. Any type of thermo-siphon heater should be so constructed that the line carrying the warm water from the heater has a continuous slope upward to the highest point in the circulating system. From this highest point there should be a continuous slope downward for the water returning to the heater. If properly constructed, check valves are not necessary in either the intake or discharge lines of the thermo-siphon heater.

3. Steam. In certain areas live steam may be bubbled directly into the crude oil for heating purposes. In other areas such a procedure would create an emulsion which is very difficult to break.

Steam is also used to heat oil through coils or drums installed in treating or stock tanks.

4. Direct heating. There is another method of heating which is at present not employed by



A view of a typical tank battery of the type used in Oklahoma on large volume production. These tanks are of the vapor-pressure type and equipped with safety valves

this company but which is worthy of mention—direct heating. This method is at present used by several companies making commercial treaters. Installed in the side of the tank near the bottom is a section of casing which leads horizontally to the center of the tank, thence upward through the center of the tank and out the top. A gas burner is placed in the horizontal section of the casing in the side of the tank and a fire is burned inside this casing. It is necessary in this case to place the treating tank a short distance from the stock tanks to eliminate any fire hazard to the stock tanks.

One item frequently overlooked when constructing a treating system is a sufficient number of sample cocks. There should be a sample cock placed in the system so each operation of the plant may be checked, when trouble appears. In this manner the trouble may be rapidly singled out and remedied. An example of good location of sample cocks for an ordinary treating system follows: one each on header, boiler heater, line leaving boiler heater, line between wash tank and settling tank, and line leaving settling tank for stock tanks.

The boiler heater should be at least 50 feet from the first heating tank. The line leading from the heater to the boot should be on an incline to insure the boiler remains full of fluid at all times. The tanks in the treating system should be close together, approximately the same distance apart as the stock tanks.

In the past and at present, almost no two areas have decided upon the necessity of, written requisitions for, or constructed treating systems in the same manner. In some districts the superintendent and farm boss decide upon the necessity for a treating system on a certain lease, in other districts the superintendent and district treater make the decision, while in still other districts the superintendent, the farm boss and the treater get together and make the decision.

Requisitions for treating systems in the various districts of this company are prepared by either the equipment engineer, the farm boss, the treater or a combination of all.

Treating systems are constructed under the direct supervision of either the farm boss, district treater, or both.

Quite obviously each of the above methods have advantages as well as disadvantages.

It is the writer's opinion the most efficient manner in which to handle the above factors is as follows: The farm boss, district treater and superintendent together decide upon the necessity of building a treating system on a certain lease. Together, the farm boss and district treater prepare the requisitions to be submitted later to the superintendent for approval or suggested changes. The district treater, either with or without the farm boss, should be on the construction of the treating system as much as his time permits.

By following this procedure, it appears to the writer, no treating system would be constructed without a definite need for it, the requisitions would not be overexpended, the system would appear neat with all lines of a size and in such a position as to efficiently treat the crude oil emulsion.

Number and Total Crude Capacity of Refineries Show Large Increases

Although many small refineries were dismantled in 1934 the total number of plants, including a few under construction, increased from 604 at the beginning of the year to a new high of 638 on January 1, 1935, according to a survey of petroleum refineries just released by G. R. Hopkins and E. W. Cochrane of the Bureau of Mines. The capacity also reached a new record, the total of 4,072,400 bbls. of crude oil daily being about 45,000 bbls. higher than the previous high of January 1, 1932.

The number of refineries increased materially in 1933, following construction in East Texas and the building of many small plants in the Rocky Mountain district and elsewhere. Most of the new plants of 1933 were built to provide an outlet for crude or because the ratio between crude oil and gasoline prices appeared conducive to profits. However, low gasoline prices and increased costs in 1934 dispelled the hopes for profits; many plants were shut down, and some were dismantled. The number of operating plants declined from 454 on January 1, 1934, to 435 on January 1, 1935, but the number of inactive plants increased from 137 to a new high of 196 during the same period. As indicated above, new construction was at a minimum in 1934, and on January 1, 1935, only seven plants were being built.

Although the trend in number of plants is helpful in providing an insight into general prosperity of the independent refiners the crude oil capacity furnishes a better index of the growth of the industry. On January 1, 1935, the total daily crude oil capacity of the completed plants was 4,058,500 bbls., or about 4 per cent higher than the total on January 1, 1934. Most of this increase is attributable to East Texas where the completed capacity increased from 128,400 bbls. on January 1, 1934, to 179,000 bbls. on January 1, 1935. Considerable modernizing was done at the large, established plants but this hardly offset the dismantling of some plants which had been idle for a number of years.

An analysis of the trend of operating capacity for 1934 indicates a steady gain in capacity between March and September, the period of heaviest consumption, with a decided decline in November and December. The weighted average operating capacity for the year was about 3,600,000 bbls., and as daily average crude runs were 2,454,000 bbls. the refineries operated at about 68 per cent of their capacity in 1934, compared with 67 per cent in 1933.

As most of the new plants added to the list in 1934 were skimming plants the preponderance of that type in point of number increased further. The total capacity of the skimming plants increased and that of the complete plants remained virtually unchanged, but because all the larger ones are complete plants the total capacity of that type is still considerably in excess of the total for the skimming plants.

On January 1, 1935, 709 pipe stills were completed or under construction, 10 more than reported a year ago. The total capacity of these pipe stills was 3,024,344 bbls. compared with a total of 2,950,414 bbls. a year ago. Of the total capacity on January 1, 1935, 2,664,746 bbls. (88 per cent) was operating on that date. The total capacity of those operating on crude oil was 2,020,880 bbls., leaving 1,608,869 bbls. as the total capacity of all the shell stills operating on crude on January 1, 1935.

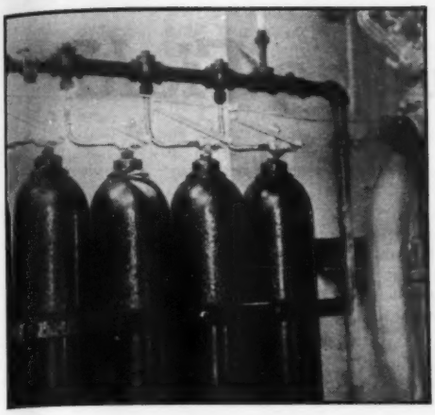
Although very few of the new refineries were equipped with cracking plants a quiet, but effective campaign of modernization and new construction at the established plants raised the total cracking capacity, as measured by the daily average charge of fresh cracking stock, to a new high of 2,229,269 bbls. on January 1, 1935. The proportion of the total cracking capacity which was operating showed a further increase in 1934; in this respect, the crude oil and cracking capacities showed a divergent trend. The trends of crude oil and cracking capacities for 1934 were similar in that new construction as of January 1 showed a drastic decline in each case. The daily average quantity of fresh feed charged to stills on January 1, 1935, was about 1,334,000 bbls., which, when divided by the operating capacity on that date, indicates an operating ratio of 70 per cent.

Protect your investment by using Axelson Pumps and Sucker Rods . . .

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

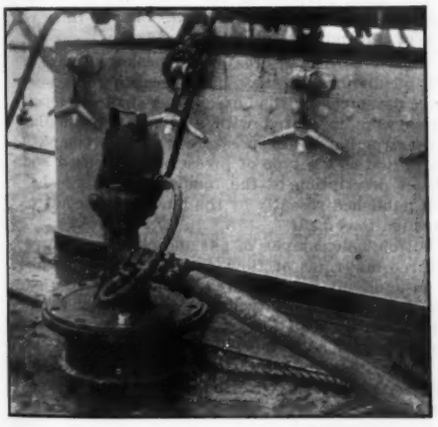
AXELSON MANUFACTURING CO.
P. O. Box 710, Vernon Station, Los Angeles, Calif.
St. Louis 50 Church St., New York Tulsa
Mid-Continent and Eastern Distributor: Frick-Reid Supply Co.
Rocky Mountain Distributor: Great Northern Tool & Supply Co.

OPERATING IDEAS



Fire Extinguishing System

The accompanying photograph shows a hook-up of carbon dioxide-gas containers as used on a sea-going tanker to put out any fires that might start in the pump room on board ship. A small cable leads from a handle in the hold where a pumper or other men on duty with the pumps can pull the cable, thereby opening all levers simultaneously on the gas containers. When the levers are opened the gas rushes out of each container into a central line which leads down into the pump room where suitable spray equipment has been provided.



Cleaning Oil Compartments

An appartus used in cleaning the oil out of oil compartments or tanks in seagoing tankers is shown in front of the hatch in the accompanying photograph. The mechanism is called a "Butterworther." It is operated by steam and hot water, the two acting on a centrifuge at the top where the large and small hose enter the mechanism. The steam and water are forced down a 2-inch tubing inside of which a shaft rotates, turning two nozzles at the bottom, the nozzles whirling like the common whirling lawn sprinkler. The mixture of steam and water leaves the nozzles with sufficient force to spray around the sides of the tanks, thus washing the oil from the sides.

Pouring Lead into Sleeve for River-Crossing Weight

In an effort to provide additional weight on a large pipe line in a river crossing to counteract the buoyant effect of the large diameter pipe the contractors installed a sleeve between each river clamp and filled the annular space between the sleeve and the pipe with molten lead. The sleeve was approximately four inches larger in diameter than the pipe and thirty inches in length. The accompanying photograph shows the method in which the molten lead was put into the sleeve or collar. The lead is put into the melting pot in smelter ingots and is melted by the torch shown. Kerosene is used as fuel for this torch, it having been forced from the torch by compressed air, final mixing and ignition taking place in the mixing

chamber shown on the end of the torch. Each of these sleeves hold about 1500 pounds of lead. The melting chamber was made from a section of ten-inch pipe, the carrying handles being of small diameter pipe and welded to the chamber. The bottom of the chamber has been swaged down small enough to fit into the opening left in the top of the large sleeve receiving the lead. As each sleeve is filled the melting chamber and torch are easily moved to the next sleeve by means of the arms extending from the sides.

Magazine Rack, Bulletin and Convenient Manual Board

The maintenance garage of one Mid-Continent oil company has designed a neat, low cost rack for literature and manuals on the different make motor vehicles used by this company. Considerable time is saved for the mechanic when some particular phase of information is needed since all information pertaining to instruction and maintenance is neatly filed in the rack. Also the leading oil publications are kept here for field men to read while waiting for their car to be serviced. This magazine rack has proved to be an inducement for the employes to preserve all literature and enables more men to benefit from it to the ultimate good of the oil company through its entire plant or field organization.

Study of Rodessa Discovery Well Data Reveals Characteristics of the Field

By L. G. E. BIGNELL

Engineers from the U. S. Bureau of Mines Experimental Station, Bartlesville, Okla., have secured data from the discovery well in Rodessa, La., field. From these data it is planned to establish fixed relations between production and reservoir characteristics.

In the past when oil wells were allowed to produce at their full capacity many methods of estimating future production were developed. Decline curves were projected and found to be reliable. These methods were used for evaluating properties for sale and tax purposes and to determine depletion. The U. S. Bureau of Mines engineers prepared instructive bulletins on this subject outlining the various methods to be employed in making these estimates.

Since 1926 when proration of oil field capacities began the old open-flow methods of calculation have not been easily applicable and it has become necessary to devise other means of estimating the field's capacity and probable future production. Again the U. S. Bureau of Mines engineers are playing an important part in developing these new methods of determining well capacity. These new methods are based upon the application of established physical laws pertaining to the action of gas and oil found in reservoirs under known conditions and from these facts determining the future capacity of wells and fields under varying rates of withdrawal.

There are several types of reservoirs to be studied and Bureau of Mines engineers are now actively engaged in collecting data concerning them and hope in due time to be able to establish fixed relations between production and reservoir characteristics. To this end a party of seven engineers from the Petroleum Experiment Station of the U. S. Bureau of Mines at Bartlesville, went to the discovery well in the Rodessa field, Louisiana, to secure data early in the life of the well from which, with similar data to be obtained later, it is hoped productive curves and other information may be compiled.

This party, composed of W. B. Berwald, M. A. Schellhardt, E. J. Dewees, Peter Grandone, Kenneth Eilerts, D. B. Taliaferro, Jr., and H. A. Buss, spent about two weeks at the well arriving there about August 15. Since that time the data have been studied at the Bartlesville station and work is still being done on examination of cores of the formation from which the oil and gas is being produced, and on bottom-hole and separator samples of oil being produced from the well.

The discovery well in this new field was United Gas Public Service Co. No. 1 Young in the center of the E half SE quarter section 21, Township 23n, Range 16w, about a mile west of the town of Rodessa, La., in Caddo Parish. The total depth of the hole is 6,048 feet. A string of 5-inch casing is set at 5,555 feet and 2-inch tubing run to 6,032 feet.

In completing this well a string of 7-inch casing was set at 5,504 feet and it was decided later to run the string of 5-inch inside of the 7-inch. Before this was done a 6-inch liner was set from 5,559 to 6,048 feet so the well is producing through a 5-inch string of casing with a 6-inch liner in the bottom of the hole.

After the string of 5-inch casing was set and cemented the cement plug was drilled out and the well brought in through the string of 2-inch tubing. This well was completed early in July and had an initial rating of from 5,000 to 8,000 bbls. of 40 gravity oil and 30,000,000 feet of gas daily. The production is from the Glenrose sand in the Trinity series of Comanche (lower) Cretaceous age.

At the well head the string of 2-inch tubing is passed through the head on the string of 5-inch casing. Connections are made between casing and tubing and production from both or either strings can be delivered into the oil and gas separator. The lines leading from casing head to the flow line to the separator are fitted with 1-inch bean on one side and 2-inch bean on the other. The lines from 2-inch tubing to the flow line to separator are both fitted with 1-inch beans.

With this arrangement it was possible to produce the well through the tubing alone or through the casing only or the production from both tubing and casing could be delivered into the common flow line from well to oil and gas separator. During the test period the instruments were run through the 2-inch tubing and the production made through the annular space between tubing and 5-inch casing. Usually the limited amount of oil and gas produced during a test period was handled through the line from one side of the casing head only and the 1-inch bean on that line adjusted to regulate rate of flow.

The well was provided with a second oil and gas separator connected with one side of the 5-inch casing head and if the volume of gas and oil desired for the test exceeded the capacity of the line from casing head to number one trap the extra production was turned into the second trap and from that trap joined the oil passing through the first separator at the gun barrel tank ahead of the battery of steel storage tanks.

The gas accompanying the oil was vented from the first and second separators and passing from the separator to the vent was metered. The gas escaping from the oil in the flow tank was conducted through a manifold to a vent and between the end of this manifold and the vent a gas meter was installed.

This arrangement of gas meters permitted the test engineers to determine the volume of gas accompanying the oil regardless of the flow plan of the gas and oil.

To determine the amount of oil produced under the various test conditions an oil meter was set in the line between the outlet from the first oil and gas separator and the gun barrel tank. Usually all of the oil flowed in this path but if it was necessary to produce part of the gas and oil through the second oil and gas separator this oil went direct to the gun barrel and flow tank where the total production was gauged with a steel line in the usual manner. When the tests were started the engineers checked the oil meter measurements by measurements taken in the flow tank and they were very close as may be noted from the figures given in the oil flow data column in the accompanying table.

The main purpose of the tests was to determine the bottom-hole pressures at various rates of flow of oil and gas from this formation.

Bottom-hole pressures were measured with a multiple-diaphragm subsurface recording pressure gauge developed by the bureau. Subsurface temperatures were measured with a gauge very similar in construction to the pressure gauge. A complete description of the type of pressure gauge used and a brief description of the temperature gauge has been published recently by the bureau in Report of Investigations 3,291.

Bottom-hole samples of gas and oil were secured at three low rates of flow. Surface measurements of gas and oil were secured at all rates of flow and the specific gravity of the gas and oil determined. Casinghead pressures and temperatures were obtained as well as like data on the tubing at the well head. Data were recorded at the oil and gas separators covering pressures and temperatures. Samples of oil and gas also were taken at the separators.

To permit equalization of flow rate and pressures at the bottom of the well it was found necessary to permit the well to produce at a predetermined rate for a period of from 3 to 18 hours before readings were taken. All surface gauges used were of the spring type and were calibrated on dead-weight testers at frequent intervals to establish their accuracy.

When the test crew arrived at the well it was found that it had been producing at a rate of approximately 133 bbls. per hour and the well was shut in

Engineers manipulating wire line reel while recording instruments are being run into the United Gas Public Service Company No. 1 Young well, Rodessa field, Louisiana

for a period of two days to permit pressure and temperature conditions to equalize before testing commenced.

After the two-day shutdown the well was opened at a flow rate of about 24 bbls. per hour and permitted to produce at this rate for about 18 hours before the first bottom-hole sample was taken at about 6,000 feet below the surface. All readings were taken under this rate of flow and this work was completed in about a two-hour period on August 25 as shown in the accompanying table.

The second test was made with the well producing at the rate of about 65 bbls. per hour and before the readings were taken the well was produced at the 65-bbl. per hour rate for about 18 hours. This second set of readings were taken on August 26 between 10:49 a.m. and 1:49 p.m.

Bureau of Mines engineers putting recording instruments into lubricator to run into United Gas Public Service Company No. 1 Young well, Rodessa field

The third test was made with the well flowing at the rate of about 166 bbls. per hour and it had been flowing at that rate for about 18 hours prior to the taking of the readings between 10:01 a.m. and 12:01 p.m., August 27.

The fourth test was made after the well had flowed at the rate of about 97 bbls. hourly for a period of four hours and the readings taken between 4:07 p.m. and 6:37 p.m. on August 27.

For the fifth set of tests the well was cut back to a 45-bbl. per hour flow rate for a period of about 18 hours and then tested between 10:40 a.m. and 12:40 p.m., August 28.

The sixth test was made later in the afternoon of August 28 after the well had produced at the rate of 127 bbls. per hour for a period of about three hours.

The seventh and eighth tests were made after the well had flowed for periods of 18 hours each. The seventh test was made with the well flowing at the rate of 28½ bbls. hourly between 8:45 a.m. and 12:15 p.m., August 29 and the eighth and last test was taken between 11:19 a.m. and 12:19 p.m., August 30 with the well flowing at the rate of 30 bbls. per hour.

Tests seven and eight were made primarily in preparation to taking bottom-hole samples. During test eight the flow from the well was through the tubing alone. During all other tests the flow was through the annular space between the 5-inch casing and 2-inch tubing.

The data secured during each of these test periods is shown in the accompanying table. The Bureau of Mines engineers have made analysis of some of these data and plotted them to secure relative values.

These data were secured to plot a bottom-hole pressure curve and determine the relation between bottom-hole pressure and production. This relationship reflects permeability of the formation being studied and may be also shown as a productivity factor.

As should be expected these data show decrease in bottom-hole pressure as rate of production increases. This production is secured from a lime formation and above the oil zone there is a gas body. In considering the gas-oil ratio this condition of gas cap above the oil bearing formation should be noted.

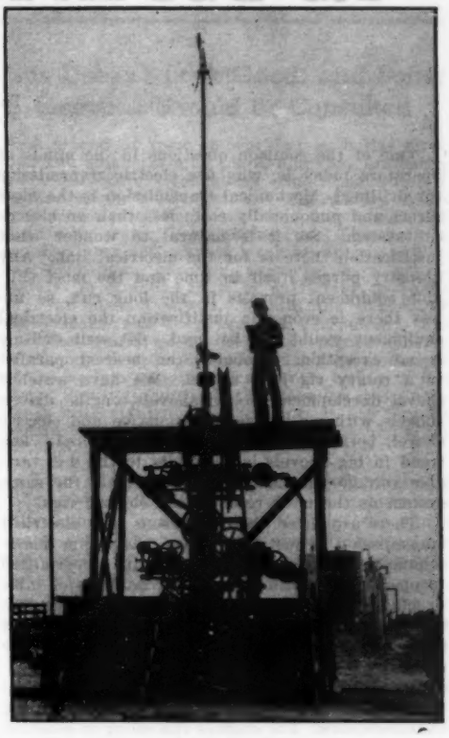
It was determined that the oil was fully saturated with gas at the formation pressure and temperature. This feature is important because it is possible to determine pressures at which gas will come out of solution and also determine the volume of gas that will escape at the various bottom-hole pressures.

It will be noted the gas-oil ratio showed a steady increase during the first four tests even though the rate of production during the fourth test was less than during the third test. This is probably explained by the fact that under the higher rate of flow the subsurface pressure was about 270 pounds less than under the next flow period. During the third test period it is probable the area immediately adjacent to the bottom of the well was partially depleted of oil and gas and into this space some gas escaped to be produced along with the oil during the next test period and thereby showing a higher gas-oil ratio for the fourth over the third period of test.

This same condition was repeated between the sixth and seventh test periods for again the gas-oil ratio was much higher when the well was flowing only 28.54 bbls. hourly than it had been when the well was making 127.60 bbls. per hour.

It should be noted also the periods of stabilization prior to the tests at the 97- and 127-bbl. per hour rates were much shorter than for the other test rates. Apparently from the data in the accompanying table the gas-oil ratios for these two rates had not become constant, although all other data indicated a constant rate of flow.

In addition to the data presented in the attached tabulation the Bureau of Mines engineers will later have data upon the samples of the core taken from the casing point to the bottom of the well. This core represents nearly 450 feet of Glenrose section of the lower Trinity formation. Representative sections of the core taken at intervals will be selected for this work, but even under such conditions many laboratory tests must be made and it will be some time before the work is completed.



General view of hookup at United Gas Public Service Company No. 1 Young well in Rodessa field, Louisiana, during recent test

Laboratory work being done on the bottom-hole and separator samples will furnish data concerning the chemical composition of the oil and gas, its shrinkage due to loss of dissolved gas and to thermal contraction, the volume of gas dissolved in the oil under various pressure and temperature conditions and the energy available from the mixture of oil and gas at various pressure and temperature conditions. These data will be presented in a future bureau report.

It is planned at some later date to make another series of tests at this well and the U. S. Bureau of Mines hopes to be able to make similar tests at other discovery wells and in time to be able to secure data upon all types of formations.

U. S. BUREAU OF MINES TESTS ON UNITED GAS CO. I. L. YOUNG WELL NO. 1, RODESSA, LA.

		Casinghead data		Tubing head data		Oil-gas separator data				Oil flow data			Gas flow data					Subsurface data (6,000 ft.)		Gas-oil ratio
						High pressure		Low pressure												
Date	Time	Pres. lb./in.² gauge	Temp. °F.	Pres. lb./in.² gauge	Temp. °F.	Pres. lb./in.² gauge	Temp. °F.	Pres. lb./in.² gauge	Temp. °F.	Tank gauges bbls./hr.	Meter bbls./hr.	Gravity °A.P.I.	H.P. separator cu.ft./hr.	sp.gr.	L.P. separator cu.ft./hr.	sp.gr.	Stock tank cu.ft./hr.	Vapors sp.gr.	Total gas (cor.) cu.ft./hr.	Pres. lb./in.² gauge	Temp. °F.	cu. ft./bbl.
8-22-35	8:00 a.m.	1,805	....	(210)	....	.....	....	..	...	(133)	....	...	.....	...	.....	...	....	....	.....	....	....	....
	9:50 a.m.	2,305	....	....	....	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
8-23-35	8:44 a.m.	2,310	....	2,200	....	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
	6:30 p.m.	2,292	....	2,282	89.1	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
8-24-35	10:22 a.m.	2,292	....	2,275	83.7	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
	3:54 p.m.	2,284	....	2,270	90.8	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	2,670	192.2	....
	7:15 p.m.	1,825	102.5	2,090	83.0	.....	....	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
8-25-35	10:44 a.m.	1,900	107.5	1,760	91.5	125.0	86.0	..	...	.....	....	...	.....	...	.....	...	....	....	.....	....	....	....
	12:44 p.m.	1,900	107.0	1,760	94.2	126.0	86.5	..	...	23.96	23.46	43.3	72,500	.675	.....	...	(62)	1.043	72,448	2,615	191.5	3,024
8-26-35	10:49 a.m.	1,810	125.0	1,364	94.0	137.0	106.5	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	1:49 p.m.	1,820	131.5	1,318	97.0	137.0	106.2	..	...	64.91	67.16	43.2	272,708	.685	.....	...	(2,500)	1.095	274,855	2,500	191.8	4,234
8-27-35	10:01 a.m.	1,027	144.0	705	92.5	140.0	126.0	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	12:01 p.m.	1,027	144.0	680	100.0	143.0	126.2	(80)	(116)	166.29	....	42.9	291,675	.684	531,725	.690	4,782	1.097	826,748	2,230	191.5	4,972
8-27-35	4:07 p.m.	1,620	140.0	680	99.0	135.0	114.0	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	6:37 p.m.	1,620	139.0	595	94.0	136.0	114.0	(80)	(104)	96.34	....	43.1	217,600	(.685)	358,860	(.690)	2,695	1.057	578,461	2,400	191.7	5,973
8-28-35	10:40 a.m.	1,920	126.0	705	90.0	.....	....	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	12:40 p.m.	1,920	127.5	705	94.0	125–140	97.0	..	...	44.55	43.24	43.4	240,900	.681	.....	...	1,921	1.095	242,571	2,550	191.5	5,445
	3:43 p.m.	1,355	138.0	580	95.5	140.0	118.0	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	5:45 p.m.	1,355	139.0	565	92.0	144.0	118.0	(65)	(108)	127.60	....	...	226,350	.685	433,400	.680	2,526	1.077	662,567	2,345	191.5	5,193
8-29-35	8:45 a.m.	1,965	114.0	755	84.0	92–102	86.0	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	12:15 p.m.	1,970	118.0	750	95.0	95–103	86.0	..	...	28.54	....	...	156,771	.685	.....	...	339	(1.095)	156,950	2,625	191.5	5,499
8-30-35	11:19 a.m.	(2,345)	....	(1,710)	....	(63)	....	..	...	.....	....	...	.....	...	.....	...	.....	.....	.....	.....	.....	.....
	12:19 p.m.	....	....	....	....	.....	....	..	...	29.75	29.00	...	77,000	.683	.....	...	....	....	77,000	....	....	2,588

Notes—Well shut in 8 a.m. 8-22-35. Tubing parted—casing and tubing pressures equalized 9 a.m. 8-23-35. Well opened at approximately 25 bbls. per hour—4 p.m. 8-24-35. Figures in parenthesis indicate these values have been estimated for the time shown or are in other ways less reliable. A correction has been applied to the stock tank vapor measurements to compensate for the volume of oil flowed into the tank while these measurements were being made.

Flexibility of Electric Hook-up Justifies Its Use in Modern Drilling Practices

By W. C. DREYER
Engineering Department, Westinghouse Electric & Manufacturing Co.

The flexibility of electric transmission for rotary drilling equipment is one of the large factors responsible in the increasing demand for this type of machinery. Other factors playing a large part in the successful operation of such power is the economy of using any of the several types of internal combustion engines as prime movers for drilling.

One of the common questions in the minds of operators today is, why use electric transmission for drilling? Mechanical transmission is the most direct and undoubtedly costs less than an electrical system. So, it is natural to wonder what justification there is for the electrical link. Any industry purges itself in time and the most suitable equipment prevails in the long run, so unless there is economic justification the electrical equipment would not be used. Oil well drilling is no exception. Probably the nearest parallel to a rotary rig is a shovel. We have watched shovel development, steam shovels, engine driven shovels with mechanical transmission and electric shovel, both high line and engine powered. The trend in big shovels is definitely to the d-c. variable voltage transmission using exactly the same system as the most recent diesel-electric rigs.

There are three distinct reasons why electrical transmission is justified. First, the engine maintenance is reduced because the engine is permitted to operate at continuous speed regardless of table or pump speed and because the electrical generators are designed to limit the load on the engines to any predetermined value. This means that the engine will not be stalled or overloaded.

The second justifying reason for electrical transmission is because of its better operating characteristics. The engines run along at constant speed. They are driving generators and are not affected at all if the power is used to drive a heavy slow speed load or a lighter high speed load. When hoisting, the motor can be stalled and the engines are actually carrying a lighter load than if the motor were hoisting at about its rated speed and power. This is because the voltage is bucked down to near zero by the high stalled motor current. Operating characteristics are also suitable for pump drive. As the pressure builds up, the pump speed falls off and goes to zero at some safe pressure.

The third fundamental reason for electrical transmission is the greater flexibility in both installation and operation. The engines and generators do not need to be lined up with the rig but may be installed at any convenient place. Also, the full output of both engines may be concentrated in the hoist motor without necessity of having a rigid or positive connection between engines.

There are other reasons for the use of electrical equipment such as faster hoisting because of ability to lift greater loads with a given size engine and smoother acceleration. However, the three above are the fundamental points.

The above advantages refer mostly to direct current. Alternating current systems are in use and are successful. Alternating current is particularly applicable when the distance between generating equipment and rig is so great that line losses make it necessary to transmit at higher voltage; when other load than the drilling rig is to be carried by the engines; when the drilling equipment will be operated at times from central station power, or when economic conditions make it advisable such as when the operator has a-c. drilling equipment already available. A-c. equipment is less expensive than d-c. for rotary drilling.

Aside from these points d-c. is superior to a-c. for oil well drilling in most instances. With d-c. there is no power dissipated in grids to reduce motor speeds. The motor speed being controlled by varying the generator voltage.

As mentioned before, d-c. permits limiting the load on the engine by means of generator field proportioning and without any special control features. The drooping characteristics permit hoisting greater loads, with a certain size of engine, than is possible with a-c. Further, this characteristic gives higher no load speed for the d-c. than for a-c. The a-c. motor speed is limited by frequence while the d-c. motor no load speed is a function of generator voltage, and is limited only by the mechanical limitations of the motor.

Direct current has the added advantage in that it is more easily controlled than a-c. since only small field currents need be varied.

After all, the electrical part of an engine electric rig is fundamentally for power transmission and control. The size of the rig depends upon the size of the engines. The electrical equipment does not add to this power. It merely uses it to better advantage.

It is generally appreciated that internal combustion engines are an economical source of power for oil well drilling. The savings made by using this form of power instead of steam are principally fuel and water and are rather hard to evaluate in general terms. They depend upon the cost of these items and this in turn varies greatly with location.

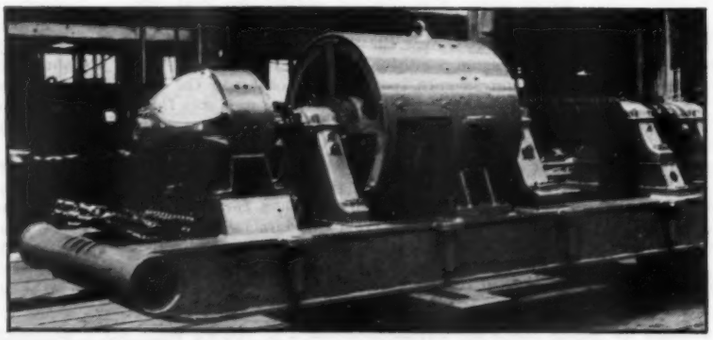
As an example of fuel consumption, a rig powered by two 8-cylinder, 9x12 diesels, rated 350 horsepower each averaged about 7½ bbls. of fuel oil and required about 50 bbls. of cooling water make up per day drilling to 7,500 feet. Water for the mud pits depends upon formation being drilled but should seldom average more than 500 bbls. per day.

Diesel, gas and gasoline engines are in successful and economical use. Each type of engine has its peculiar advantages and its field of greatest economic worth. As a rule the gas engine is less expensive in first cost and the diesel is less expensive to operate.

In laying out a rig for rotary drilling the capacity of all parts should be based upon the mud pumps. This is the greatest continuous load and will determine the engine size. The hoisting duty is not the determining factor because it is intermittent and of comparatively short duration.

The electrical equipment should be chosen so that the sizes of generators and motors are balanced and capable of transmitting the power to the pump. If this is done correctly, there will be sufficient power for a fast hoisting cycle.

As an idea of sizes, the two 9x12 8-cylinder engines mentioned above are used with two generators, rated 200 kw., 40° C. and two exciters rated 25 kw., 40° C. temperature rise. The generators and exciters are all mounted on a single long bedplate with V-belt pulleys. A disconnecting coupling is in the middle of this unit so that one engine drives a generator and exciter independent of the other engine and generator. The mud pump motors are rated 200 horsepower, but could well be rated 225 horsepower. The drilling motor is rated 200 to 400 horsepower. The high rating is used for hoisting with both engines supplying power to it. The equipment is supplied complete with all auxiliary equipment, such as wash down pump motor. There are a half dozen units of this size operating mostly on 6,000 to 8,000-foot wells. They are about equivalent to a rig equipped with 12x12 engines operating on 300-pound steam pressure.



Direct current generator and exciter of the type used in rotary drilling rigs. All leads are shown at the end of the skid type bedplate

For drilling with smaller pumps, say 6x16", the entire equipment should be just half this size. This would be 90 kw. or 100 kw. generators, 15 kw. exciters and 100-horsepower or 125-horsepower pump motor and 100- to 200-horsepower hoist motor. It should be driven by two engines rated 175 horsepower. Any equipment using larger pumps should be proportionally of greater capacity.

It is customary to choose apparatus with as much duplicate equipment as possible on the rig. This is to permit operation at reduced capacity or at least to provide facilities for coming out of the hole regardless of what fails. Duplicate engines, generators and exciters permit a dual source of power which is entirely utilized for normal operation. Often duplicate motors are used for mud pump and drawworks drives. Control circuits are arranged for connecting remaining apparatus to perform any drilling function in event of failure of any part of generating equipment.

PROBLEMS FROM READERS

Edited by T. F. Smiley

Sulfur Found Accidentally in a Salt Dome While Drilling Test for Oil

I want to get information concerning sulfur operations in Louisiana. My understanding is that companies drill in that territory to get either oil or sulfur, or perhaps both. I happen to be interested in this subject through having a small interest in some leases which I have been told have sulfur deposits of commercial value. I am told that a big sulfur deposit was found in one salt dome in Louisiana while drilling for oil. Can they get both oil and sulfur from the same dome? In either case, I would like to know how the sulfur is recovered.—G. N. T.

Jefferson Island salt dome in Louisiana might be used as an example in answering your question. In the first place oil, salt, sulfur and gas—one or all four—may be found in the same dome. Sulfur, which is obtained by drilling, was found accidentally in the Jefferson Island dome in what was intended to be an oil test. Your question regarding the method of recovering sulfur seems to be adequately answered in the following description of the Frasch process by Lawrence O'Donnell in his article on "Jefferson Island Salt Dome, Louisiana," in the November, 1935, number of the A.A.P.G. Bulletin:

"The success of the Frasch process depends on keeping the underground strata of the dome at sufficient temperature to melt sulfur. This necessitates the strata must also be pressure-proof, as sufficient pressure must be maintained to keep the water in the formation at the melting point of sulfur.

"The sulfur as it is found in the ordinary dome is a yellow orthorombic crystalline type at a temperature of 90° F., and with a specific gravity of about 2.06. The sulfur melts at about 239° F. and remains in a liquid form until a temperature of 340° F. is reached, when it assumes a molasses-like, gummy character, and cannot be readily handled. For this reason, the sulfur must not be heated above 340° F.

"The superheated mine water (water that enters the formation to melt the sulfur) is not heated in a boiler, but in a special type of direct-contact heater, steam from the boiler mixing with water in this heater. It is found that the temperature of the water as it leaves the heater approximately equals the temperature corresponding with the pressure of the steam entering the heater.

"However, to maintain the water at the temperature mentioned, the water must be kept under pressure; the pressure required being equal to or greater than the original pressure of the steam which heated the water. This pressure is furnished by a booster pump which takes the water as it leaves the heater, raises its pressure to 300 pounds gauge, and forces it to the point of sulfur-mining operations, where it may again be boosted in pressure and forced down into the well, after which it passes into the sulfur formation. Experience has shown it usually takes 2,000-5,000 gallons of water per ton of sulfur mined by the present Frasch process.

"The hot mine water (water that enters the sulfur formation to melt the sulfur) dilutes with the cooler water of the formation, thereby losing much of its heat. This is especially true of the water as it flows away from the bottom of the well to the outer formation, which formations are beyond the zone of heat application. For this reason, to get the best efficiency it is necessary to heat the mine water well above the melting point of sulfur.

"The mine water, on being diluted with the natural water of the formation, absorbs calcium sulfate, carbonate, and chloride salts, and other minerals dissolved in this natural formation water. The mine water also dissolves certain of these salts from the formation. These salts saturate the bleed-water (the excess water drawn from the mine operations for the purpose of keeping the pressure of the sulfur formation from rising to an excessive figure) and when this water is drawn from the formation, a difficult disposal problem exists, as the water is poisonous and pollutes any stream or body of water into which it is turned. For this reason, it is necessary to treat this water before disposing of it.

"As the hot mine water leaves the sulfur well and passes into the sulfur formation, it immediately rises, as it is a pure water and has a gravity of 0.90 at a temperature of 330° F. and is much lighter than the natural water, which is saturated with salts and is cooler."

Readers are invited to send questions relating to drilling, producing and transporting operations. These questions will be referred to persons capable of answering authoritatively. The names of those writing for information will be held confidential, initials only being published. This department cannot undertake to answer questions involving royalty or other investments, patents or intricate formulas or questions which should be submitted to consulting engineers, geologists or lawyers.

WHY THEY CALLED IT *Stone Age*

The Stone Age, denoting the earliest stage in human culture, is so designated because of the materials used for weapons, utensils, etc. The term is a rather loose one, for actually some primitive tribes even now are in their Stone Age. Archeological and geological exploration has revealed much of intense interest. In a Persian village at least 6,000 years old, presumably buried by an earthquake, excavators found furniture, dishes and tools just as the inhabitants had left them. Dishes contained bones from meat being eaten when the catastrophe struck. Knives were of flint, and utensils of stone or pottery. These and other remains indicate, archeologists say, the village was destroyed in the latter part of the Stone Age.

This Doesn't Look Good, and Boiler Inspector Should Be Consulted

A friend of mine is working as boiler fireman at a small refining plant, and they are using water for boiler feed under conditions which I believe might be dangerous. The water, which goes directly to the boiler-feed pump comes off a gasoline-water heat exchanger. The boilers usually carry 150 pounds working pressure. The heat-exchanger gasoline pressure is approximately 50 pounds, as it is sufficient to force over an 80-foot tower. Should the exchanger tubes leak (and they are old equipment), the gasoline would go to the water pumps (boiler feed), mixed with the water. Isn't there danger of the boilers popping prematurely owing to the lower boiling point of the gasoline that suddenly enters them? If they pop at 150 pounds pressure into the air, might it not flash? What other dangers might there be?—F. L.

There are some conditions not clearly stated in your letter so it will be necessary to assume certain details. It is recommended that the whole problem be submitted to the boiler inspector for the district so that inspection of the installation can be made in detail and an order issued for corrections if necessary. If the boiler inspector is not available the city fire marshal should be able to determine safety conditions and make recommendations.

An engineering opinion, arrived at from a study of your statements, is that the situation described is dangerous. The fact that it is possible for raw gasoline to enter the boiler-feed water system is sufficient to condemn the installation.

Gasoline expands so that each gallon will form about 35 cubic feet of gas, if pressure is reduced and temperatures raised. The temperature within the boiler operated under 150 pounds pressure is about 358.5° F. This high temperature would tend to expand the gasoline vapors rapidly. The degree of danger would depend upon the volume of gasoline that escaped into the feed-water system.

What Oil Recovery to Be Expected From Wayside Sand in Kansas?

What should be considered the normal oil recovery per acre in the shallow Wayside sand of Kansas, running about 5 feet of pay at a depth of 500 feet in an area where no oil has been produced from it so far? This oil tests between 32 and 35 gravity. Little gas is produced with the oil. Is there any difference between the so-called Wiser sand and the Wayside sand in Montgomery County, Kansas?—J. P. C.

Without more information it would be difficult to make an accurate prediction as to the probable recovery from 5 feet of Wayside sand found at a depth of 500 feet in Montgomery County, Kansas, but if you care for such a guess it might be said that you need not expect more than 2,500 bbls. per acre from this sand.

The fact that the formation carries little gas is taken to indicate that the yield will not be high. The proper way to get the information you seek would be to obtain a representative core of the section and have it tested in a laboratory.

As to the correlation between Wiser and Wayside sands in Montgomery County, it is quite probable that the sand you describe is the Wayside and found above the Checkerboard lime. The true Wiser sand should be about 80 to 100 feet below the Wayside, but the Wiser sand of Oklahoma has not been correlated with a Kansas formation.

Geologists familiar with the area say the upper member of this Pennsylvanian section is Wayside sand and the sand below it from 80 to 100 feet might be correlated with the Wiser sand.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit problems to Dr. C. K. Francis. Questions should give as much detail as possible. Inquiries must be signed but only the given initials will be printed. The source of questions is considered confidential. Questions requiring discussion of patents, the use of intricate formulas, extended computations, or cost estimates cannot be considered in these columns.

Gasoline Produced From Coal by the Hydrogenation Process

Do you have a short description of the hydrogenation process for making gasoline from coal? How do the yields of gasoline compare as made from coal and heavy oils?—N.B.G.

The principle of the hydrogenation process for making motor fuel is essentially the same when treating coal or heavy oils. The composition of gasoline is about 85 per cent carbon and 15 per cent hydrogen, but in coal, while containing nearly the same quantity of carbon, there is only 5 per cent of hydrogen, and heavy oils have a hydrogen content of approximately 11 per cent.

The purpose is to add enough hydrogen in any case to produce a liquid having the composition of gasoline. The quantity of hydrogen used is the control, but it must be produced and consumed in the process at a reasonable cost. The commercial plants of Europe are reported to treat coal by hydrogenation to yield about 60 per cent motor fuel. The heavy oil residues may produce outputs equivalent to 80 to 90 per cent of the charge.

The hydrogenation plant put into operation October 15, 1935, at Billingham, England, is said to be charging a 50 per cent mixture of coal and oil. This plant has an output capacity of 2,500 bbls. of gasoline per day. The cleaned coal is pulverized, then mixed with oil to make a paste. This is mixed with hydrogen under a pressure of 3,700 pounds per square inch, while heated in the reaction chamber to about 850° F.

A small heavy oil fraction containing the unconverted coal, 5 per cent by weight, and ash is treated for oil recovery and the coke residue is used as a fuel. The major part of the coal is transformed into lighter oils which are vaporized, and are recovered on cooling the gaseous products leaving the converters. The crude oil so obtained is distilled into heavy oil, middle oil and gasoline. Heavy oil is further hydrogenated, and a plant similar to that used for the hydrogenation of coal, to give middle oil and gasoline. Middle oil resulting from these two steps is further hydrogenated in vapor phase converters, in which the vaporized light oil and hydrogen are passed over a solid catalyst. The crude vapor phase product is distilled, the residual middle oil being separated from petrol and treated again. The whole of the coal is thus transformed into a small solid consumable residue, gas, and gasoline.

Creosote oil and low-temperature tars are either employed for making up the coal paste or distilled and the fractions introduced into the liquid or vapor phase stages as appropriate. These materials play no essential part in the main process of making oil from coal, but are conveniently treated along with the coal.

The final gasoline, after a simple purification, is pumped to storage tanks from which it is shipped for distribution.

Solvent Refining Agents Toxic and Physiological Properties—Benzene

I would appreciate receiving any information you may have relating to benzene, acetone, para-cresol, nitrobenzene, chlorex, furfural and aniline, now used in the solvent processes for making oils.—F. L.

All of these cannot be discussed at one time so the information will appear in series. Additional solvents may be added.—Editor.

Benzene—Colorless liquid. Formula C_6H_6; molecular weight 78.05; specific gravity 0.8784; A.P.I. gravity 29.5; solubility in water, a trace, freely soluble in alcohol, ether, gasoline; melting point 42° F.; boiling point 176° F.; flashpoint 59° F.

This compound, as used in the petroleum industry, is the technical grade of about 90 per cent purity, commonly designated benzol. This may contain impurities, which are toxic, such as nitrobenzene and aniline.

Benzene is a depressant to the nervous system and prolonged exposure to the fumes has produced chronic poisoning characterized by uncertainty of gait, mental disturbance, low vitality and convulsions. Fatal cases have shown hemorrhages into the lungs and stomach. Great reduction in the number of white blood cells, with fever, diarrhea, followed by death are steps showing the progress of the poison. Benzene is injurious to both liver and kidneys. The dose, when used in certain medical treatment, is from 0.9 to 2.8 ml.

The U. S. Public Health Service has made an investigation where enough benzene was liberated into the atmosphere to charge the air with 28 to 223 parts per million. Examination of the blood taken from the workers in these rooms gave evidence of benzol poisoning. The earliest and most characteristic sympton in chronic benzene poisoning is a reduction in the number of white blood cells, and the blood examinations of these workers showed that in three cases the cell count, while not definitely abnormal, indicate a departure in the relationship between the various types of white blood cells, which coupled with a definite exposure to benzene, was indicative of benzene absorption.

The acute effects of benzene inhalations are shown in the table, arranged from Noxious Gases:

PHYSIOLOGICAL RESPONSE TO BENZENE, TOLUENE AND XYLENE

Slight symptoms after several hours' exposure	1,570 to 3,130
Max. concentration that can be inhaled for 1 hr. without serious disturbance	3,130 to 4,700
Rapidly fatal for even short exposure	19,000

These concentrations do not differ greatly from those for corresponding effects from gasoline and it seems that in the production of acute symptoms the hydrocarbons of the benzene series are not much more toxic than the petroleum distillates. However, prolonged inhalation of benzene leads to poisoning directed against the blood circulating system, whereas a similar condition does not follow from exposure to petroleum distillates.

References: Noxious Gases, Henderson and Haggard, page 164; Journal Industrial Hygiene, 9, 61, 1927; Public Health Reports, 1926, pages 1,357, 1,410 and 1,516.

Detecting Small Quantities of Water in Motor Fuels

Will you kindly give me an idea of a method suitable for finding small amounts of water in motor fuel mixtures? These mixtures may contain benzol and gasoline with possibly small portions of an organic liquid.—D. S. C.

If the quantity of water in a liquid is not large enough to be determined by the A.S.T.M. distillation, there are several chemical methods that are available, of which the following are examples.

Pure sodium reacts with water to form sodium hydroxide and hydrogen. The volume of hydrogen found may be calculated to water.

Anhydrous copper sulfate serves for a qualitative test. The chemical, which is colorless, becomes blue in the presence of water.

The magnesium nitride method has been perfected by Boisselet and Rachkani, as reported by Library Bulletin of Abstracts, 10, 142, 1935.

This method depends upon the reaction:

$$Mg_3N_2+6H_2O=3Mg(OH)_2+2NH_3$$

The ammonia formed is passed into a known quantity of standard acid solution and ammonia calculated from the titration of the excess acid.

When making an analysis 5 gms. of nitride is put into the flask and dry benzene added to remove what ammonia may have been formed by the moisture of the air. Three-fourths of the benzene is distilled off and the absence of ammonia verified by moist litmus paper. More benzene is added, and the sample, of such size that it contains 0.5 gm. of water, is added through a dropping funnel. Ammonia is distilled over into the standard acid solution, and the excess acid titrated.

The magnesium nitride must be pure. A pure form may be prepared by passing nitrogen over pure magnesium.

References: A.S.T.M. Standards on Petroleum Products, 322, 1935. Designation D 95-30. Boisselt and Rachkani, Annales de l'Office National des Combustibles Liquides, 1935, 3, 49.

Fuels Used in Petroleum Refineries of the United States

We are collecting information relating to the fuels used in industries and wish to ask if you will supply this information covering petroleum refineries?—W.G.P.

The petroleum refineries of the United States make use of six fuels, which are—oil, acid sludge, coal, natural gas, still gas (refinery gas) and petroleum coke.

The quantities of the fuels consumed in refineries for the years 1933 and 1934 have been reported by G. R. Hopkins, U. S. Bureau of Mines, R. 1, 3281, August 1935, from which the data presented here have been taken.

	Quantity	
Refinery fuels—	1933	1934
Fuel oil, bbls.	33,292,000	33,163,000
Acid sludge, bbls.	4,990,000	4,702,000
Coal, s. tons	1,069,000	1,189,000
Natural gas, cu. ft.		79,965,000,000
Still gas, cu. ft.	172,085,000,000	164,741,000,000
Petroleum coke, s. tons	263,000	194,000

During recent years the industry has been finding oils and gases too valuable to use as fuel so coal and natural gas are being used in larger quantities. The developments in cracking, especially polymerization, will tend to lower the use of still gases for fuel.

Michigan Field Report

TWO PROSPECTIVE FIELDS IN MONTCALM AND BAY AREAS

By PAUL A. ELLIOTT

MUSKEGON, Mich., Dec. 16.—Two prospective new oil fields were indicated in Michigan last week when wildcat wells, one in Montcalm County, 8 miles southwest of the Crystal pool, and the other in Bay County, about 35 miles northeast of the Porter pool, made commercial production.

The more sensational of the two discoveries was made by Jetter Oil Co. and Lima Oil Corp., whose No. 1 C. N. Long, SW NW SE section 1-9n-6w, Bushnell Township, Montcalm County, flowed about 80 bbls. after swabbing several hundred feet of oil from the Dundee sand.

The well had filled up about 1,200 feet with oil the week before when the pay sands were encountered at about 3,100 feet. After another foot of drilling to a total of 3,101 feet, or 3 feet in the limestone, the hole was swabbed and flowed 80 bbls. Deeper drilling failed to increase the initial and the operators were considering an acid treatment.

The Long well is located in the northeast corner of Bushnell Township and is about 10 miles north of several recent tests in Orleans, Ronald and Lyons Townships, Ionia County, where a considerable drilling play is still in progress in search of another central Michigan field.

The log of the well shows 10-inch drive pipe to 352 feet; 1,168 feet of 8¼-inch casing and 3,098 feet of 6-inch casing. The Marshall was encountered at 988 feet, the Traverse was topped at 2,665 and the Dundee at 3,098 feet. The elevation is 795.1 feet.

Two dry holes previously recorded in sections 2 and 26 of Bushnell Township, the former by D. W. Sessions in his No. 1 J. F. Sessions and the latter several years ago, virtually preclude extension westward, operators are optimistic of future possibilities in other directions.

C. B. Jetter, head of the Jetter Oil Co., originally formed and operated at Muskegon, is said to be planning an immediate offset on the adjoining Arntz lease. Major operators including the Pure, McClanahan and Shell also have prospective locations in the vicinity.

Two 500-bbl. field tanks were erected and Pure Transportation Co. strung 4-inch pipe for a possible line to the nearest railroad point.

Bay County Discovery

The other discovery of the week was indicated when M. C. Fordyce No. 1 Mike Suszko, SE SE NE section 11-18n-3e, Gibson Township, Bay County, made about 8 bbls. an hour after acid treatment.

Located 35 miles northeast of the Porter pool, Midland County, and about 20 miles east of the Beaverton Township, Gladwin field, the Suszko well was estimated good for about 10 bbls. a day, natural flow, from the upper Traverse pay sands. It had been plugged back from failure in the Dundee to test a show in the Traverse at 2,040 feet.

Pumping equipment was to be installed to give it a test for probable commercial production, although it was not considered as important as the Bushnell Township discovery in the Dundee sands. The Traverse has been less productive than the Dundee in most Michigan fields.

Crystal Field

Flow of Strange & Fortney No. 1 Elva M. Rockelman, NW SW SE section 11-10n-5w, Crystal Township, Montcalm County, brought in week before last as the most important extension in the Crystal field in several months, had been pinched back from an initial of 80 bbls. an hour to about 550 bbls. a day. Located a mile south of previous production, it topped the Dundee at 3,188 feet and struck Dundee pay at 3,190 feet. Drilling was stopped almost immediately to avoid water troubles.

The Rockelman test greatly improved the prospects of success in several tests drilling under Duck Lake. It is located about a mile southeast of the Durbin discovery well and nearly 4 miles south of the United-Conners well in section 26, Ferris Township, the northern limit of the field, where a rig is being erected for the No. 2 Conners.

More than 1,000 bbls. of new initial production was developed by the completion of two tests in section 3, Crystal Township, by the Daily Crude Oil Co. Daily's No. 5 W. Robbins, SE NW NE section 3, flowed 556 bbls. in 12 hours and was estimated good for about 800 bbls. in the Dundee. It was plugged back from water struck at 3,197 feet and treated with acid at 3,189 feet. No. 6 Robbins, SE SW NE section 3, was completed by the same operators for an initial of 270 bbls. in 24 hours in the Dundee sand topped at 3,178 feet and drilled to 3,186 feet.

J. W. Leonard, Jr. and others No. 2 John Tow, NE NE SE section 3, was deepening after a flow of about 15 bbls. an hour accompanied by water. Dundee was topped at 3,162 feet and the well had been drilled to 3,188 feet.

One failure was completed in Crystal Township when Rex Oil & Gas Co. No. 1 R. and C. Ball, NE SE SE section 2, struck bottom water at 3,205 to 3,207 feet.

Stork Oil Co. No. 6 George Dickenson, in section 3, made 40 bbls. an hour after a heavy acid treatment in the Dundee sand. It was cemented back from 3,191 to 3,188 feet before treatment. It was pinched in to about 30 bbls. an hour.

Six other Crystal Township tests were nearing completion in the Dundee sand including: John Vale No. 1 George Barger, NW SW SE section 2, cased above the Dundee; Stork Oil Co. No. 3 George A. Dickenson, NW SW SE section 3, drilling at about 3,060 feet; Daily Crude Oil Co. No. 4 W. Robbins, SW NE NE section 3, drilling at more than 3,100 feet; Michigan Producers & Refiners Corp. and Alvin H. Weber, trustee No. 3 William Strait, NW NE SW section 3, drilling at 3,150 feet; McClanahan Oil Co. No. 1-C Harry and Geneva Flint, SE NW NW section 11, drilling at about 3,000 feet and Stork Oil Co. No. 5 Dickenson, NW NW SE section 3, drilling in.

Ferris Township

An unexpectedly heavy flow of 247 bbls. in 12 hours was encountered when Dougherty & Markey, Inc. No. 2 H. Fisher, NW SW SW section 36-11n-5w, Ferris Township, blew in at 3,162 feet and flowed wild through the 6-inch casing. The test flowed from pay sands about 30 feet higher than in No. 1 and considerable oil was lost before a control head could be installed. Five-inch casing will be run.

George Hanners No. 1 C. H. King, SW NW NE section 26, Ferris Township, which sprayed oil from the Dundee sand at 3,254 feet the week before, was being plugged back after water invasion. Dundee was topped at 3,250 feet.

Morris-Barnes Oil & Gas Syndicate No. 3 Pugsley, previously drilled into the Dundee pay sands in section 26, same township, was deepened 3 feet and started to flow at the rate of 30 bbls. an hour until cut off by water invasion. Operators were undecided whether to plug back or abandon the hole.

T. F. Caldwell, Inc., No. 6 Jesse Flint, NE SW SW section 35, filled up several hundred feet with oil when drilling was suspended at 3,190 feet with plans to treat with acid. It will be completed this week.

Ferris Township also added a dry hole to the record of the CrystalFerris field last week when James H. Hibbard No. 1 Bessie Nickerson Sartor, SW SE NE section 22, was completed dry at 3,308 feet.

Home Township

More than 600 bbls. of new production was added in the Home Township, Montcalm County, Traverse field last week where the Daily Crude Oil Co. completed two wells. The larger of the two, Daily No. 1 William Jensen, NE SE NW section 10-12n-6w, flowed 360 bbls. in 12 hours after acid treatment in the pay at 3,054 feet. It made 118 bbls. initially.

The other new well was Daily No. 1 Clyde Long, NW SW NE section 10, which made 108 bbls., natural flow, at 3,096 feet after topping the Traverse limestone at 3,050 feet. It was being tubed for acid treatment.

Casing was being run above the Traverse by Max Pray in his No. 1 George Skinner, SE NW NE section 9, preparatory to completion.

Montcalm Wildcats

Northern Oil & Gas Corp.'s No. 1 Richardson, C NE NW section 27-12n5w, Richland Township, Montcalm County, finally was abandoned after inactivity for more than a year.

The first of several interesting tests in Sidney Township, Montcalm County, was nearing completion as the Sidney-Montcalm Oil Co. No. 1 Albert Madison, NW NW SW section 33-10n-7w, was drilling in.

Rex Oil & Gas Co. No. 1 Sanford Newland, NW NW NW section 2-12n-3w, Cato Township, Montcalm County, was tubing to test the Traverse after being plugged back from failure in the Dundee. It made about a 10-bbl. showing in the Traverse on the way down.

Frank J. Asam's No. 1 Fred Pakes, NE NE NE section 7-10n-6w, Evergreen Township, also was nearing possible production drilling at 2,700 feet.

Midland County

About 700 bbls. of new production was added in three Midland County completions, two in the Porter field and the third in Lee Township.

Pure Oil Co. completed its No. 7 and No. 8 C. D. Alexander for 425 and 210 bbls. a day, respectively, after acid treatment in the Dundee. The former, located SE NE NE section 19-13n-1w, flowed from a depth of 3,409 feet and the latter, located NE NW NE, same section, was bottomed at 3,418 feet.

None of 17 other projects in Porter Township were near completion last week.

W. Hunter Atha No. 2-A F. H. Taulker, SW NE SE section 7-15n-1w, Lee Township, flowed 85 bbls. in the first 12 hours after acid treatment, made 81 bbls. during the next 24 hours and was rated at least 50 bbls. settled production. Dundee was topped at 3,520 feet and the hole drilled to 3,554 feet.

Water had been successfully plugged off in the Pine River Oil Co. No. 1 H. Sims, C NE SE section 4-13n-1e, Mount Haley Township, ready to treat the Berea pay sands for possible production at 2,462 feet. The test recently was reopened after being abandoned some time ago. Discovery of commercial production in the Berea in Larkin Township, Midland County, several weeks ago led to the retesting of the Sims. Completion was expected this week.

Three other Midland County tests, two in Jasper Township and one in

Greendale, were nearing completion last week in the Dundee.

The two in Jasper were Pure Oil Co. projects, the No. 2-B Corning Estate, NE NW section 12-13n-2w, drilling at more than 3,400 feet, and the No. 1-A George H. Eldredge, NE SW section 2, same township, drilling below 3,200 feet.

Braden & Saunders No. 1 Kate Stapleton, SE NW NE section 13-14n-2w, Greendale Township, was shut down at 3,587 feet ready to drill into the Dundee.

Ogemaw County

Of 20 uncompleted projects on locations under permit in Ogemaw County, eight were drilling in the Traverse or Dundee formations, in a race with winter weather, which presents a real handicap in this bleak northeastern Michigan field.

One small oil producer and one dry hole comprised the entire completion list last week, although all of the eight near completions probably will be finished before the Christmas holidays.

United Drillers, Inc., made a 65-bbl. well of No. 1 Thomas Rau, NE NE SW section 19-22n-2e, West Branch Township, by acid treatment. Dundee was topped at 2,575 feet and drilling completed at 2,732 feet. It is on the north edge of the West Branch pool.

The dry hole was Ward & Prout Syndicate No. 1 State Department of Conservation, NW NE NE section 7-21n-3e, Mills Township, plugged and abandoned at 2,645 feet, 142 feet in the Dundee without a show.

Nearing Completion

The eight tests nearing completion in six Ogemaw Townships were: H. C. Nelson No. 3 State of Michigan, SE SW SW section 31-22n-3e, Churchill Township; Muskegon Development Co. No. 1 Nettie B. Watson, NW SE NW section 5-23n-3e, Cumming Township; Durham & Jones No. 1 W. F. Wiechers, NE SW SE section 1-21n-2e, Horton Township; Melling Oil & Gas Co. No. 6 State, NW SW NW section 6-21n-3e, Mills Township; Gordon Oil Co. No. 1 Raymore, SW SE SW section 13-22n-1e, Ogemaw Township; and three in West Branch Township, namely: Morris-Barnes Oil & Gas Syndicate No. 2 Golf Course, SW SW SE section 20-22n-2e; Weber Oil Co. No. 1 Frank Estey, SE NW SE section 28, and the same company's No. 1 State Department of Conservation, SW SE SE section 36.

Gassers

Deepening into water at least temporarily dampened hopes for a new central Michigan gas field in the northwest corner of Montcalm County near Howard City last week.

The Western Oil & Gas Co., or Edward Stewart No. 1 S. C. Haines, C NE SE section 17-12n-9w, Winfield Township, first reported a flow of about 2,200,000 feet a day from the Michigan Stray sands topped at 1,144 feet but was drowned out by water at 1,155 feet.

The Haines test is a southwest diagonal offset to L. G. Thompson's No. 1 J. K. Knapp, section 17, which last spring struck a flow of about 6,000,000 feet in the Stray sand but was carried on to the Dundee in an unsuccessful search for oil. Attempts were made to plug back the Knapp to produce the gas but it was finally plugged and abandoned. Operators had not yet decided future plans for the Haines or other possible tests in the vicinity.

The most important new gas completion of the week was Edward Stewart's No. 1 G. W. and Maude Amsden, C NE SE section 31-13n-7w, Millbrook Township, which had an open flow capacity of 5,050,000 feet a day in the second Michigan Stray sands between 1,314 and 1,317 feet. The first pay at 1,300 feet made 765,000 feet.

Wiser Oil Co. No 1 Wilson-Perkins, C NE NW section 34, Millbrook, cemented casing at 1,263 feet and was expected to drill into the shallow Michigan gas sands this week. It was the only gas test nearing completion in this section of the Millbrook-Hinton-Belvidere Township pool.

Fletcher and Leman No. 1 Milo Peterson, C SW NE section 11-12n-7w, Belvidere Township, Montcalm County, was drilling at more than 1,100 feet and nearing the gas sands.

Deep Tests

Two deep tests were nearing the Dundee in Austin and Wheatland Townships, Mecosta County, while two Belvidere tests were drilling toward the Traverse for oil.

The Mecosta deep tests were Goll, Graves & Mechling's No. 1 Ruetz, SE NE SE section 17-14n-7w, Wheatland Township, drilling into the Dundee at more than 3,200 feet, and Taggart Brothers No. 5 Robert Fish, C NW NW section 9-13n-10w, Austin Township, a former gas test.

Goff & Rabuck No. 1 Frank and Clara Williams, NE SW NE section 14, Belvidere Township, was drilling in the lower Traverse and the Michigan Exploration Co. No. 1 W. J. Richardson was drilling ahead after being delayed by trouble setting pipe.

Hal-Be-Oyle and Gas Corp. No. 1 F. Sears, C NE NW section 9-13n-8w, Hinton Township, failed to get gas in the Michigan Stray sands and was shut down in red rock pending a decision whether it will be deepened for oil. Hendershot & McMillen No. 1 Walter Mackey, C NE SE section 23, Hinton Township, was running casing before drilling into the shallow gas sands.

John Mercurio, trustee, No. 1 G. H. Whitcomb, NE NE NW section 7, Belvidere Township, drilled into Marshall water at 1,320 feet after passing through a show of about 700,000 feet of gas in the Michigan Stray topped at 1,247 feet. The Marshall was encountered at 1,292 feet. The Whitcomb was a mile from proved production.

Western Michigan

Despite 90 feet of drilling in the Dundee limestone, the National Minerals Corp. No. 1 Jasper Lewis, SE SE SW section 5-10n-11w, Solon Township, Kent County, had struck no oil, gas nor water at the close of the past week.

It was the deepest of three active tests in Kent County. Drive pipe was landed at 402 feet in the James H. Barton No. 1 Albert H. Smith, SE NE NE section 29-10n-10w, Nelson Township, and a fifth attempt to drive pipe was being made in the Rex Oil & Gas Co. No. 1 Andrew Johnson, SW SE NW section 36-10n-12w, Tyrone Township.

Operations had been suspended in the Reed Oil Co. No. 3 J. J. McDermott, SW SW section 10-10n-16w, Muskegon Township and county, after the hole had been plugged back to 575 feet to shoot the Coldwater shale for possible gas production. The shot was scheduled this week.

Five other western Michigan tests were active including two in Newaygo, two in Oceana County and one in Mason County. John B. Northcott No. 1 fee, SW SE NW section 31-15n-16w, Elbridge Township, Oceana, was in the Traverse, and Dragoon Development Co. No. 1 W. K. Young, SW NW section 15-17n-15w, Logan Township, Mason County, in the Dundee.

Gladwin County

Three tests were nearing completion in the Dundee sand in Beaverton and Bentley Townships, Gladwin County, with two new locations made.

Smith Petroleum Co. No. 1 Mae E. Fruchey, SW SE SW section 2-17n-2w, Beaverton Township, was drilling at more than 3,700 feet, while M. F. Whitehill's No. 1 William Bell, NW NE NW section 11, same township, was nearly as deep. Mr. Whitehill No. 1 Chris Welcher, SW NE SW section 2, same township, also was drilling at more than 1,600 feet.

The Bentley Township wildcat being drilled by the United Producers & Royalty Co. on the E. E. Nettleton lease, NW SW NE section 24-17n-2e, was about 3,500 feet deep.

Joseph Drury made location for a north offset to his successful Dell well in section 2, while the Consumers Power Co. has a rig built for a test two locations east of the Smith-Fruchey test.

Wildcats

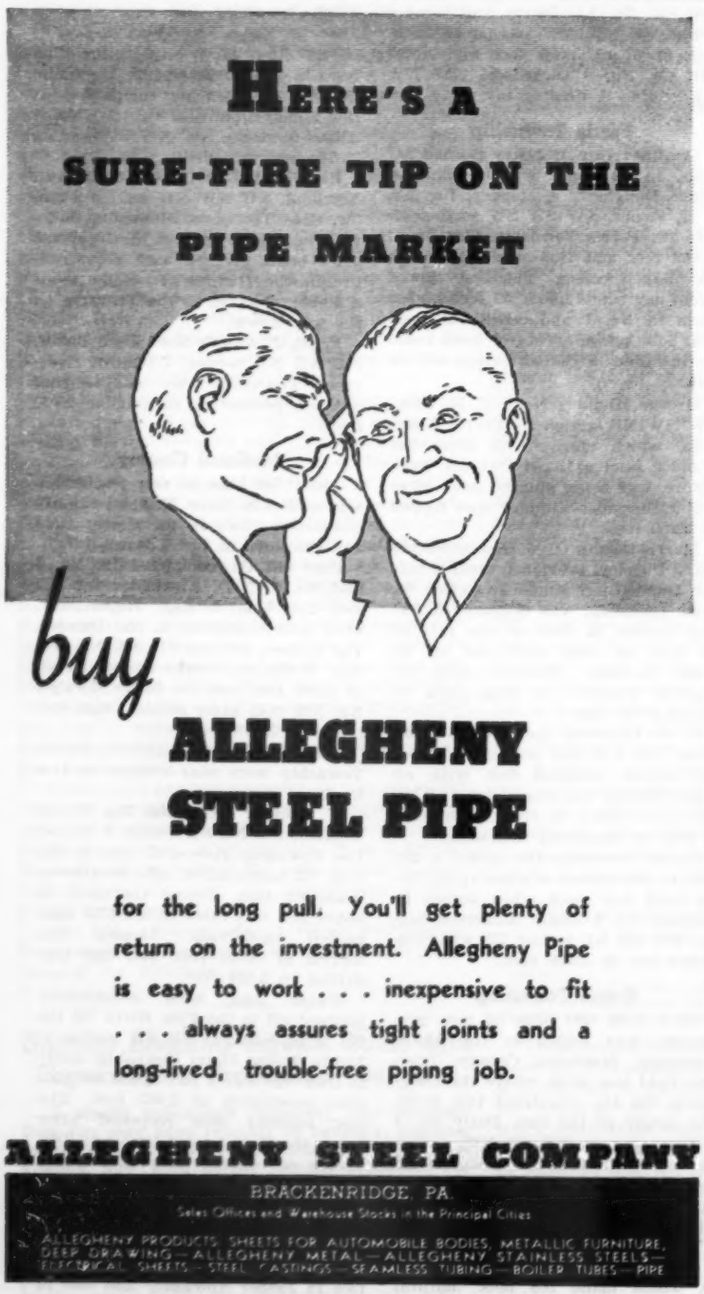
One disappointment was recorded last week in south central Michigan when the Petroleum & Gas Development Co., Inc., No. 1 Mulvaney, NE SE NE section 31-1s-1e, Henrietta Township, Jackson County, was dry, plugged and abandoned at 2,217 feet where it struck bottom water.

Gratiot County

Four Gratiot County tests were nearing possible completion, three in the Dundee and the fourth in the Michigan stray.

The three oil tests were Miller Brothers No. 1 Mae Ryan, NW SE NE section 22-9n-1w, Elba Township,

(Continued on Page 77)


HERE'S A
SURE-FIRE TIP ON THE
PIPE MARKET
buy
ALLEGHENY
STEEL PIPE
for the long pull. You'll get plenty of return on the investment. Allegheny Pipe is easy to work . . . inexpensive to fit . . . always assures tight joints and a long-lived, trouble-free piping job.
ALLEGHENY STEEL COMPANY
BRACKENRIDGE, PA.
Sales Offices and Warehouse Stocks in the Principal Cities
ALLEGHENY PRODUCTS: SHEETS FOR AUTOMOBILE BODIES, METALLIC FURNITURE, DEEP DRAWING—ALLEGHENY METAL—ALLEGHENY STAINLESS STEELS—ELECTRICAL SHEETS—STEEL CASTINGS—SEAMLESS TUBING—BOILER TUBES—PIPE

drill stem
SAFETY
VALVES

Carried on the bottom of the Kelly Joint, the T-I-W Drill Stem Safety Valve serves as a blowout preventer to close the inside of the drilling string, removing all strain from and eliminating all danger of cutting out swivel, rotary hose and other connections. Valve has the same O. D. as a tool joint or pipe coupling, and is amply strong to stand hard drilling. Wherever a blow-out preventer is used, a T-I-W Drill Stem Safety Valve should be used. Illustrated descriptive pamphlet on request.

TEXAS
IRON WORKS
HOUSTON TEXAS

Ask the
NORVELL-WILDER MAN
about
KEROTEST VALVES
and FITTINGS
Norvell-Wilder
Supply Company

NOWERY J. SMITH SUPPLY COMPANY
DISTRIBUTORS-FIELD ERECTORS
DESIGNING ENGINEERING
OIL WELL SUPPLIES
HOUSTON, TEX. GULF COAST

SEE
THIS
HAPPY
MAN...

He is glad now, for he used a Baker Wall Scraper to clean up the oil sand, make the hole bigger and let more oil come into his liner.

Now he gets much more oil out of his well and he is full of glee and his bank account is full of money.

Among Gulf Coast Drilling Contractors

Rowan Drilling Co. received the contract for a second test to be drilled at Cheneyville in Rapides Parish, Louisiana, for Amerada Petroleum Corp. and is preparing to move in a rig for a second wildcat to be located on the Cotton Lake prospect in Chambers County for the Salt Dome-Gem Oil Co.

C. & C. Drilling Co. has completed No. 1 Maco Stewart for Coast Petroleum Co. at the Dickinson field for a large distillate producer. It was completed through perforated casing from 8,632-42 feet for an initial production of 23 bbls. per hour through various chokes. In San Jacinto County a rig is being moved in for a wildcat to be drilled for Cockburn Oil Co.-Hargrove and C. & C. Drilling Co. It is in the Christian Smith Survey.

J. E. Hooper was forced to shut down two wildcat tests in Harris County for A. C. Hill due to the high water from Buffalo Bayou. No. 1-B Swilley is shut down at 5,503 feet and No. 1-A Swilley was spudded and shut down. Both tests are on the Sheldon prospect northeast of Houston. For himself in San Jacinto County, No. 1 Love is drilling in shale below 2,524 feet. It is in the Drury McGee Survey.

Rutherford Drilling Co. has cemented casing on bottom at No. 1 Johnson for Skelly Oil Co. at the Bay City field, Matagorda County, and is preparing to test. It is bottomed in the new sand at 7,510 feet. For the same company at the Samfordyce field, No. 11 Seabury is waiting on surface casing to set.

Anderson, Kerr and DeArman are drilling below 5,000 feet on a wildcat in Chambers County for Black Gold Oil Co. It is southwest of the Anahuac field in the Levi Barrow Survey.

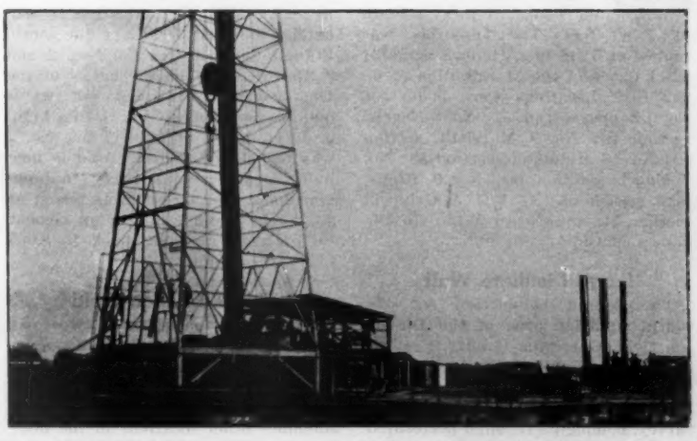
Glenn H. McCarthy completed his No. 2 Bertrand at the Conroe field for a 550-foot extension. It made 550 bbls. per day through a quarter-inch choke from a total depth of 5,133 feet. The large rig used on this test is being moved to Jefferson County for McCarthy, Inc. No. 1 Howth, a wildcat north of Winnie in the T.& N.O. Survey, section 70, on a block of 7,000 acres which has been worked with geophysical instruments by McCullum Exploration Co. At the Anahuac field for Humble Oil & Refining Co. and McCarthy, Inc. No. 5 White is drilling below 6,000 feet and should reach the sand during the week.

Nicklos Drilling Co. completed No. 2 Marcantel at the Tepetate field, Acadia Parish, Louisiana, for Continental Oil Co. for an initial production of 360 bbls. in 16 hours through a three-sixteenths inch choke and is drilling below 7,800 feet on No. 1 Kern for the same company.

Smith and McDannald are nearing the 5,500-foot sand at St. Martinsville in St. Martin Parish on No. 2 Smedes for Tide Water Oil Co., and are preparing to set screen at Big Hill on No. 2-A Pipkin for Stanolind Oil & Gas Co. bottomed at 6,698 feet. Two active rigs are located at Louise on No. 3 McIntyre for Pure Oil Co. and at Long Lake for the Tide Water Oil Co.

Al Buchanan, of San Antonio, completed several producers in San Patricio and Duval Counties during the past week. In the Plymouth field of San Patricio County, Plymouth Oil Co. No. 23-C Welder was brought in for an average well. In Loma Novia, Duval County, wells were completed for Shell Petroleum Corp., Humble Oil & Refining Co., and Texas Co. Buchanan and Blanco Oil Co. No. 4 Wood-Welder was brought in for an initial production of 31 bbls. per hour through a three-eighths inch choke in the Seven Sisters field of northern Duval County. Al Buchanan has 13 rigs drilling in these three fields at present.

Trinity Drillers, Inc., San Antonio, has four rigs drilling in Southwest Texas. Slick-Urschel No. 1 Watson and Shipp of the Fort Merrill pool of Live Oak County is drilling below 2,350 feet. In Duval County, Trinity Drillers No. 1 Driscoll is down 1,810 feet. Two rigs are located in the Lopez field of Webb County, where the company is drilling for Montour Production Co. and Superior Oil Co.



Nicklos Drilling Company rig on Kern lease, Tepetate field, Acadia Parish, Louisiana, for Continental Oil Company

See this
Downcast
OIL
MAN...

He is so sad because he is getting very little oil from his once productive well.

Lots of oil is down below but enough does not come up. He is worried for he wants much more oil to flow and his bank account is low.

SPECIFY....
McEvoy
BLOWOUT PREVENTER
INSERTER
A revelation to the Oil Industry
.... one man operation ....
J.H. McEVOY & CO.
HOUSTON, TEXAS

Want to
STEP
AHEAD?

Reading important oil books is the surest route to

SOLID
SUCCESS

For a FREE list of such oil books just address the

Book Department

THE OIL AND
GAS JOURNAL
Tulsa

Texas and Louisiana Gulf

TURTLE BAY TEST PRODUCES; DEFINE ANAHUAC WESTERLY

By
F. L. SINGLETON

HOUSTON, Tex., Dec. 16.—Stanolind Oil & Gas Co. No. 1 A. D. Middleton located on the Turtle Bay prospect, northern Chambers County, was washed in from a screen setting made at 6,589-6,626 feet, total depth, and on a four-hour gauge ending at 7 a.m., December 14, it flowed at the rate of 27 bbls. per hour through a quarter-inch choke, with tubing pressure 700 pounds and casing pressure 1,350 pounds. The well was still cleaning itself and its production is expected to be increased considerably after it is freed of wash water. Seven-inch casing was cemented last week at 6,589 feet after 39 stands of 32 gravity oil had been recovered on a drill stem test from 6,571-6,626 feet.

Turtle Bay is situated about 9 miles northwest of the Anahuac field, in an area which has been worked extensively with geophysical instruments. Due east, in the Luke Bryan Survey, South Gulf Oil Co. abandoned No. 1 White at 7,114 feet after coring salt water sand, and southwest, on the Cotton Lake prospect, Salt Dome-Gem Oil Co. recently abandoned No. 1 Lawrence at 7,005 feet. Based on geological markers, No. 1 A. D. Middleton is about 150 feet structurally higher than the two abandonments. The following are the geological tops of the three wells:

South Gulf No. 1 White, Discorbis, 5,798 feet; Heterostegina, 6,115 feet; Marginulina, 6,449 feet; Frio, 6,825 feet.

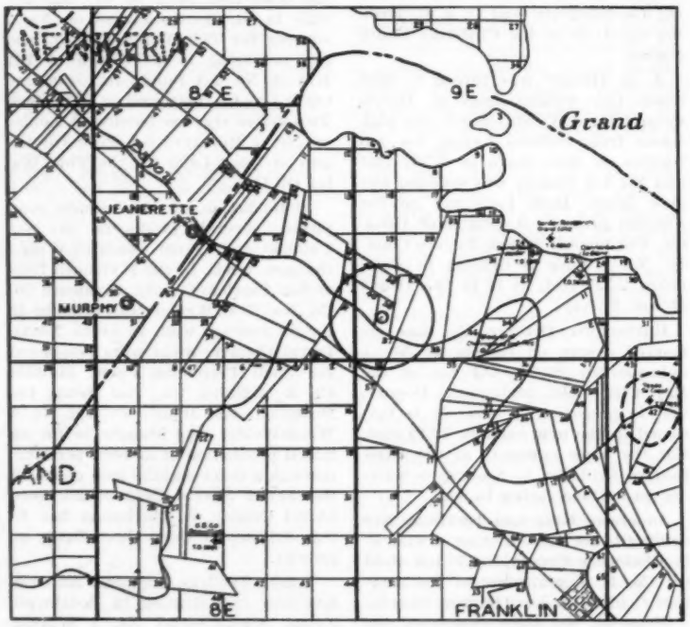
Salt Dome No. 1 Lawrence, Discorbis, 5,883 feet; Heterostegina, 6,185 feet; Marginulina, 6,430 feet; Frio, 6,788 feet.

Stanolind Oil & Gas No. 1 Middleton, Discorbis, 5,688 feet; Heterostegina, 6,002 feet; Marginulina, 6,274 feet, Frio, 6,504 feet.

The new well is situated a few hundred feet inland from Turtle Bay on a block of approximately 5,000 acres, 3,000 of which extend out into the bay. Actual foot measurements are 426 feet from the west line and 466 feet from the south line of the A. D. Middleton 120-acre tract in the Shadrock Burney Survey.

Anahuac Further Defined

The Anahuac field, Chambers County, was further defined when Domestic Exploration Co. No. 1 Marshall located on the west side of the field in section 55, H.&T.C. Survey, was drilled to 7,150 feet without encountering any showings of oil or gas. An electrical coring test was made which showed broken sand and shale with no shows from 7,105-41 feet. It is being deepened to the salt water sand and will be abandoned. It is about a mile west of the nearest production and is over 100 feet structurally lower. Two completions and nine locations were made in the field, all of which were made by Humble Oil & Refining Co. In section 57, No. 7 Clark topped the sand at 7,069 feet and with 7-inch casing cemented at 7,064 feet, it made 24 bbls. per hour through a quarter-inch choke with tubing pressure 975 pounds. On the east side of the field, No. 1 Zappe in section 51, extended production a few hundred feet north, when it made 28 bbls. per hour through a quarter-inch choke from a total depth of 7,080 feet. No. 6 Broussard in the south part of the field in section 63, topped the oil sand at 6,932 feet and is waiting on cement to set at a depth of 7,080 feet. The Discorbis was topped at 5,946 feet, Heterostegina at 6,214 feet and the Marginulina at 6,932 feet. Locations were made for No. 3 Zappe, section 51; No. 3 Engels, section 50; No. 1 Marshall, section 50; No. 13 Middleton, section 58; No. 7 Engels, section 50; No. 9 Broussard, section 63; No. 1 H. A. Grippon, section 51, and No. 6 White in the James McGahey Survey.



Herton Oil Co. No. 1 Roane, in northern St. Marys Parish, Louisiana, which is preparing to test after showing 3,400 feet of oil on a drill stem test from 7,460 to 7,512 feet

(Map courtesy of W. W. Zingery, Esperson Building, Houston)

Large Distillate Well

The second completion for the south extension area of the Dickinson field, Galveston County, resulted in a large distillate producer. It is Coast Petroleum Co. No. 2 Maco Stewart located in the W. K. Wilson Survey, completed through perforated casing from 8,632-42 feet for an initial production of 23 bbls. per hour through various chokes, with casing pressure 2,400 pounds and tubing pressure 1,700 pounds. It is bottomed at 8,657 feet. Discorbis was topped at 6,888 feet, Heterostegina at 7,199 feet, Marginulina at 7,574 feet and Frio at 8,275 feet. It is over 100 feet structurally lower than the company's No. 1 Stewart, another distillate producer, 660 feet due east. To the north in the John Sellers Survey, Humble Oil & Refining Co. is preparing to test No. 6 Maco Stewart which is bottomed in the deep sand at 9,142 feet. Seven-inch casing was cemented at 8,974 feet. If productive it will extend the field 3,000 feet due south. Stanolind Oil & Gas Co. Nos. 2 and 3 State, located on the banks of the Dickinson Bayou tested salt water and are being plugged back to a higher level. No. 2 State in Tract No. 2 was tested at 9,135 feet and is now pulling tubing preparatory to plugging back. No. 3 State was tested at 8,132 feet and is waiting on cement to set after plugging back to 8,035 feet.

South Houston Field

With the completions of two tests the past week at the South Houston field, Stanolind Oil & Gas Co. has practically completed its original drilling program and is expected to announce other locations in the near future. Drilling District No. 10 was temporarily abandoned in salt at 4,888 feet and District No. 21 was completed at 4,015 feet for an initial production of 198 bbls. in 20 hours through a quarter-inch choke with tubing pressure 350 pounds and casing pressure 525 pounds. District No. 26, formerly known as No. 1 Burkey, and which was originally completed at 4,062 feet, was deepened to 4,788 feet and recompleted for an initial production of 411 bbls. in 24 hours through a quarter-inch choke. The only active well in the field is District No. 27, which is being prepared for a drill-stem test to be made at a total depth of 4,622 feet. Out of 13 completed wells, 8 have been completed for producers and the balance were dry holes. With the exception of Sterling Oil & Refining Co.'s No. 1 Dean, all the wells have been drilled by Stanolind Oil & Gas Co.

Hastings Field

On the west side of the Hastings field, Brazoria County, Stanolind Oil & Gas Co. abandoned No. 2 Kidd after it failed to produce on several production tests. It was first tested at 6,115 feet and was then drilled to 6,137 feet, total depth, and then plugged back to 6,100 feet where it showed nothing of importance on a test made through perforated casing from 5,977-80 feet. It is due north of No. 1 Johnson, a producer, and it has apparently cut a fault between the two wells. Location is in the A.C.H. &B. Survey No. 2. On the west side of the field, in the H.T.&B. Survey No. 36, the company's No. 2 Shaw was completed at 5,944 feet and made 121 bbls. in eight hours through a one-quarter inch choke with tubing pressure 625 pounds and casing pressure 650 pounds. Seven-inch casing was cemented at 5,690 feet. Due north, No. 3 Pennock is running screen and tubing to test sand bottomed at 5,776 feet.

At the Lockridge prospect, northwestern part of Brazoria County, Gulf Production Co. has plugged back No. 1 Wilkes and Smith from a total depth of 6,647 feet and is now waiting on cement to set at 6,300 feet. A series of tests will probably be made from this level to around 6,400 feet where showings of oil were encountered in several cores. Location is the John W. Hall Survey.

New Test in Jefferson

In the northwestern part of Jefferson County, Glenn H. McCarthy is moving in a rig for an interesting wildcat to be drilled on the Howth lease situated 2,330 feet east of the west line and 466 feet south of the north line of the T.&N.O. Survey No. 70. The well is located on a block of 7,000 acres which has been worked with geophysical instruments and the contract depth is 8,000 feet. The prospect is northeast of two deep tests

(Continued on Page 71)

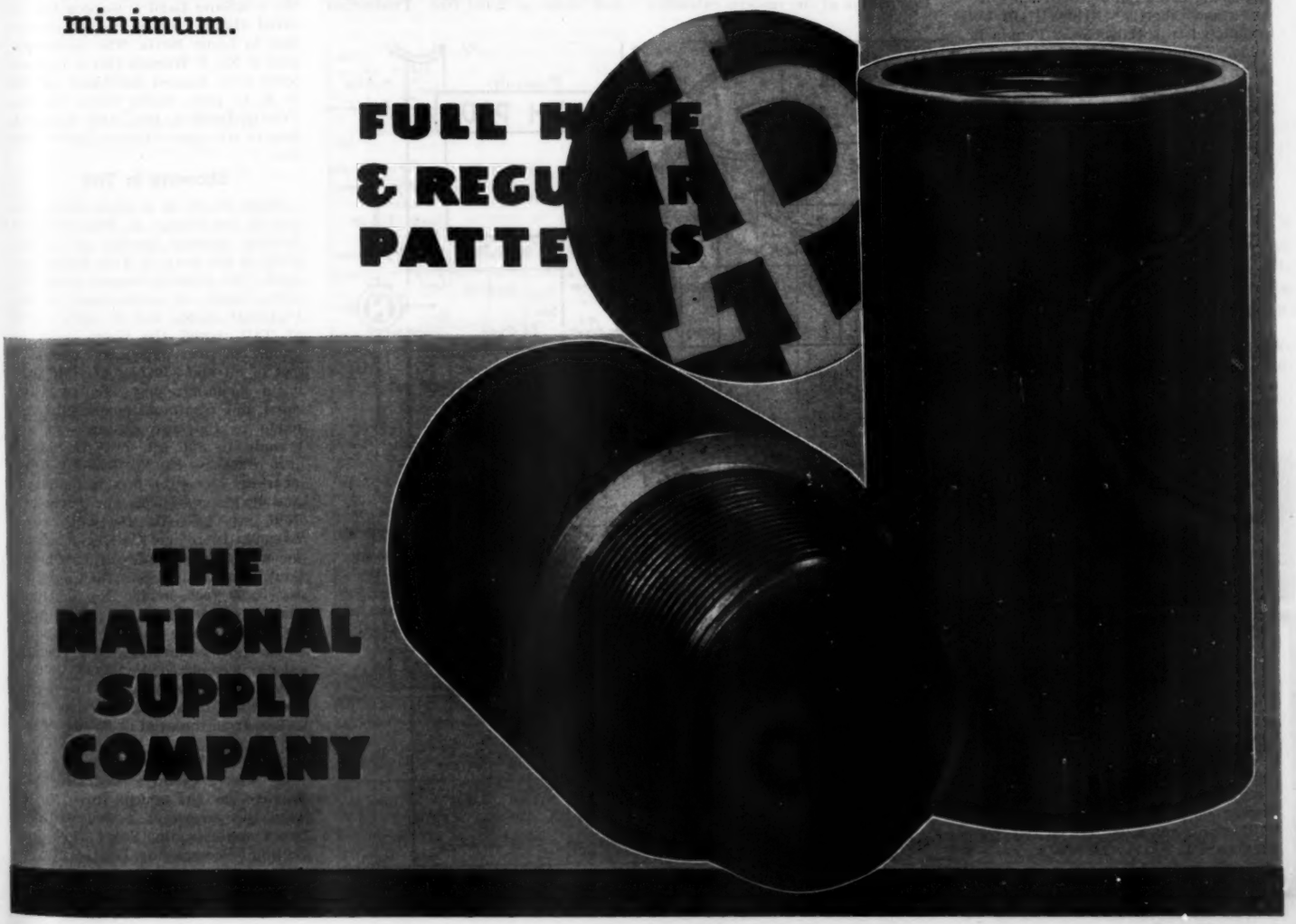
NATIONAL TOOL JOINTS

STEEL of exceptional basic quality, heat treated, coupled with a high degree of precision in processing assures uniformity in National Tool Joints.

PRECISION MACHINING after heat-treatment provides threads of greatest accuracy.

GALVANIZED THREADS reduce the possibility of galling to an absolute minimum.

FULL H LE
& REGU R
PATTE S



THE NATIONAL SUPPLY COMPANY

Southwest Texas District

LAREDO DISTRICT IS FIRST IN NEW WELLS; LIVELY LEASING

By
GEORGE WEBER

SAN ANTONIO, Tex., Dec. 16.—Southwest Texas concluded one of its most active week's operations with an increase of completions in proven areas and continued high activity in the vicinity of recent discoveries.

The Laredo district generally with Loma Novia, Seven Sisters and Lopez leading, accounted for the majority of the new oil wells, and Nueces County experienced development in leasing and drilling at its usual active rate.

San Patricio County

San Patricio County entered the picture with leasing of acreage around Taft progressing at increasingly higher figures. Also some of the smaller shallow fields in various sections enjoyed a resumption of development.

Loma Novia finished the week's drilling with 15 completions and about the same number of new locations. All new producers were in proven territory, but some edge tests are being drilled and will reach critical stages shortly. Bridwell Oil Co. completed two wells: No. 2 Pennia in Block 7, Survey 78, for 22 bbls. per hour and No. 3 Pennia for an estimated 20 bbls. per hour in the same block. Rodney DeLange made three completions: No. 3 Bishop Cattle Co. in Survey 76 for 13 bbls. per hour, No. 3 DuVon in Survey 76, for 100 bbls. per day, and No. 4 Hahl, in Survey 78, for 34 bbls. per hour. Also in Survey 78, Frank Gravis and Gilcrease Oil Co. brought in No. 2 Byland for 32 bbls. per hour, and Claude Hamil No. 4 Hahl initialled 20 bbls. per hour. Hamil No. 7-C Hahl, in Survey 63, was completed but no gauge was made. The remaining completions included: Highland Oil Co. No. 1 B.C.C., located in Survey 76, for 25 bbls. per hour on a half-inch choke; Humble Oil & Refining Co. No. 4-A Mary C. Hubbard, in section 84, for 16 bbls. per hour, with gas injection; Reynosa Oil Co. No. 1 F. C. Jackson, in Survey 114, is making 75 bbls. per day; Shell Petroleum Corp. No. 13 Hubbard and No. 16 Hubbard in Survey 77, and Texas Co. No. 11 Vela, Survey 42, for an initial production of 262 bbls. per day from sand at 2,612-14 feet, and No. 3 Hugo Wendt in Survey 68, for 31.4 bbls. per hour through a three-quarters inch choke.

Two outpost wells are drilling in this field. Humble Oil & Refining Co. cored sand at 2,702-03 feet and sandy shale at 2,703-07 feet in No. 5-C Welder in Survey 554, and is running liner. The same company has spudded No. 5-A Hubbard, northeast corner of Survey 84. Both tests are eastern outposts. Rosan Oil Co. is drilling plugs at 2,790 feet on the No. 4 Hubbard in Survey 71, also an eastern edge well.

Montour Production Co. has taken over a Lipscomb & Daubert lease and will drill No. 3 Hubbard in Survey 75.

Seven Sisters' New Wells

Completion of four oil wells in the Seven Sisters field of northern Duval County, two of which constituted extensions, marked a sharp upward turn in the steady development of that field. Henderson & Harvey drilled plugs early in the week on their No. 1 Welder and completed it for 21 bbls. per hour on a quarter-inch choke from sand at 2,426-31 feet. This sand corresponds to the lower Government Wells sand, producing in North Government Wells and in the northern part of the Seven Sisters field. The new producer went dead in the middle of the week when the choke was increased beyond one-half inch, but was flowing again later on a smaller choke. The well, located about 2 miles west of production in the Seven Sisters, marks a major extension, proving up much acreage in the intervening area.

Completion of the eastern extension to the field took place early in the week, as expected. Westheimer and Daube No. 1 Z. Campos came in for 27 bbls. per hour through a half-inch choke. This well produces from the Chernosky sand at 2,202-10 feet.

Another well in the field is on this upper sand: Diamond Half Oil Co. No. 1 Serna, located in Survey 384, a south offset to the discovery well, Henderson and Harvey's No. 1 Chernosky. This well, if completed will be the third to get production from that depth, the discovery well being the other. Sand in the Diamond Half well was cored at 2,202-20 feet and casing is set for early attempted completion.

Two inside producers were brought in during the week in Seven Sisters. Al Buchanan and Blanco Oil Co. gauged 31 bbls. per hour on a three-eighths inch choke on No. 4 Wood-Welder. Santa Clara Oil Co. No. 11 Welder came in for an estimated 36 bbls. per hour through a quarter-inch choke at 2,494 feet. Production of these two companies together with Atlantic Oil Producing Co. in the southern part of the field comes from a slightly deeper sand than that producing in the northern part of the field. Humble Oil & Refining Co. No. 2-B Serna, a west offset to Westheimer and Daube No. 1 Campos, tested the Chernosky sand at 2,199-2,207 feet and recovered 900 feet of oil in 10 minutes with 65 pounds working pressure and three-eighths inch chokes top and bottom. Casing has been set and plugs will be drilled early in the week. New locations in the field were made by Buchanan and Blanco, Shell and Santa Clara companies, and Mid-Continent and Atlantic companies are drilling wells started last week.

Duval County

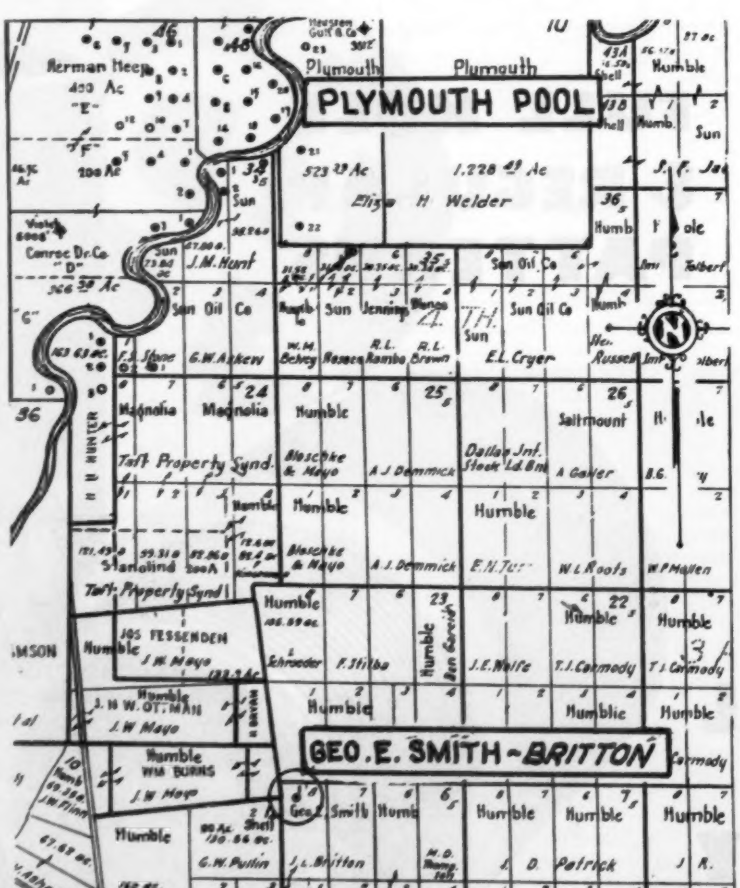
In Duval County, seven wildcats are making hole, though hindered considerably by recent heavy rains in that section. Magnolia Petroleum Co. is drilling at 3,430 feet on the No. 1 Milano Land & Garden Co., located about 2 miles east of production in Loma Novia. The same company's No. 1 Worden-Duval is down 3,065 feet, located northwest of the S. R. C. pool. Santa Clara Oil Co., Trinity Drillers, Inc., and Rogers & Rogers are other wildcats below 1,000 feet.

Showing in Taft

Show of oil in a short drill stem test in the George E. Smith's No. 1 Britton spurred leasing to a high pitch in the town of Taft during the week. The wildcat, located about 2½ miles south of production in the Plymouth field, and 3 miles north of Taft, cored the Greta sand at 4,880-4,905 feet and made about 70 feet of oil and 350 feet of fluid during a one-minute test. Due to heavy rains and resultant impassability of roads to the test, casing was not brought in and set until the latter part of the week. No definite offset locations have yet been announced. Activity increased in the Plymouth field, especially in the south edge. Magnolia Petroleum Co. is getting under way on the No. 5 Corpus Christi Bank location, and Sun Oil Co. is below 5,200 feet on the No. 3 Hunt. The latter company is rigging up on No. 1 Edgar, also in South Plymouth. In the center of the field, Plymouth Oil Co. completed No. 23-C Welder for a good producer at 5,620 feet, and Heep Oil Corp. brought in No. 12-E Welder from the sand at 5,646-50 feet.

Nueces County

In Nueces County, bordering San Patricio on the south, three fields were the scenes of active drilling. Seven wells in the Saxet field are drilling or completing. Southern Minerals Corp. set casing on sand at 4,385-4,403 feet in No. 2-A Isensee. This is the same sand producing in



The Smith well tested oil at 4,880-4,905 feet in Greta sand and may extend the Plymouth field in San Patricio County 2½ miles

No. 1-A Isensee, which made an initial of 850 bbls. per day. The sand is higher than the main pay of the field. Houston Oil Co. completed No. 2 Isensee in the lower sand at 4,862-69 feet without a gauge. The well was flowing in pits at an estimated rate of 8 bbls. per hour of fluid, 70 per cent salt water, on a quarter-inch choke.

Santa Clara Oil Co. is drilling below 1,300 feet on No. 2 Driscoll, offset to the discovery well of the new Clara Driscoll field. About 2 miles northeast, Masterson has resumed drilling on No. 1 Eschberger after having been shut down for titles. The Saxet Heights field on the edge of Corpus Christi has three wells active, one nearing completion. J. K. Culton's No. 1 Whelan, his third test in the new field, made 4,080 feet oil on a drill stem test and casing has been set.

The most active area of Webb County is Lopez, with seven rigs drilling at the present time. The only completion of the week in that field was G. G. Mortimer No. 4 M. Lopez, making 14 bbls. per hour from 2,179-88 feet. Three wildcats are under way in the county which will attempt to find production in the Mount Selman sand around 5,000 feet. They are: J. E. Neal No. 1 Laurel Brothers in Survey 119, drilling at 4,300 feet; California Co. and Mills Bennett No. 1 W. C. Billings in Survey 45, drilling below surface casing, and Holland Reavis No. 1 Webster in Survey 684, Carolina-Texas field, spudding in.

Live Oak County suffered a setback with five abandoned tests during the week. Drilling is being resumed in increased activity around the Calliham field in McMullen County and the Von Ormy field in Bexar County. Both are shallow fields with small production.

Gulf Coast Fields

(Continued from Page 68)

drilled by the Yount Lee Oil Co. a few years ago.

At the Shepperd area of southeastern San Jacinto County, locations were made for two wildcat tests by the Cockburn Oil Co. No. 1 Cruse is 330 feet from the south and east line of a 163-acre tract in the H.&T.C. Survey, and No. 1 Kilburn Moore is 330 feet from the south and east line of a 854.33-acre tract in the J. F. De Rumayor Survey. Northwest in the Cold Springs area, J. E. Hooper and others No. 1 R. B. Love is drilling in shale below 2,524 feet.

In Sheppards Mott

Much interest is centered at the Sheppards Mott area, Matagorda County, where Helmerich & Payne No. 1 Hawkins is bottomed in sandy shale at 7,125 feet after encountering sand that carried an odor of gas and distillate. At the end of the week, the operators had cemented 950 feet of 6⅝-inch flush joint casing at 6,757 feet. Location is in the D. A. McCarthy Survey, and the well is reported to be running much higher than H. M. Smith No. 1 Wadsworth, to the west, that has been completed for an initial production of 15 bbls. per day at a total depth of 8,853 feet.

At the Bay City field, Matagorda County, Skelly Oil Co. was running tubing preparatory to testing its No. 1 Johnson through perforated casing from 7,503-06 feet. The well is bottomed in sand at 7,510 feet which showed considerable oil on a drill stem test made last week. Location is in the M. Cummings Survey and if productive it will extend the field 2,000 feet south.

Shell Petroleum Corp. has abandoned No. 1-A Mauritz, a west offset to the discovery of the Mauritz field, Jackson County, at 7,401 feet. Location is in the A. Kountze Survey. This is the third abandonment for the field and it leaves only the east side of the field open for development. Across the line in Wharton County, Texas Co. has reached the sand at No. 6-A Pierce located in the Pickett Ridge field and is preparing to run 7-inch casing for a test of sand bottomed at 4,710 feet.

LOUISIANA

While the outcome of a scheduled production test to be made on a possible pool opener in northern St. Mary Parish, Louisiana, was being awaited, attention in Coastal Louisiana shifted to the Big Lake prospect, Cameron Parish, where Magnolia Petroleum Co. is trying to cap its No. 1 Broussard after it blew out while the operators were pulling the perforator from the hole for a scheduled drill stem test to be made from 8,026-32 feet. For the first 30 minutes the well showed a small amount of oil but then started flowing an estimated 8,000 bbls. of salt water with 35,000,000 feet of gas per day. While the well may be abandoned after it has been capped, its tremendous gas volume will no doubt lead to other tests being drilled on the company's 17,000-acre block. The well was drilled to a depth of 9,501 feet and was testing a series of sands indicated on an electrical coring test. Location is in section 13-12s-2w.

Herton Oil Co. No. 1 Roane, located west of Charenton, northern St. Mary Parish, was to be tested the first part of the week after the operators had cemented 7-inch casing at 7,460 feet. The test is bottomed at 7,512 feet and casing was run after it tested 3,420 feet of oil last week on a drill stem test from 7,460-7,512 feet. This prospect has been looked upon favorably for a number of years as several tests has been drilled in the area, the deepest being drilled by the Edwards Drilling Co. which was abandoned below 8,000 feet.

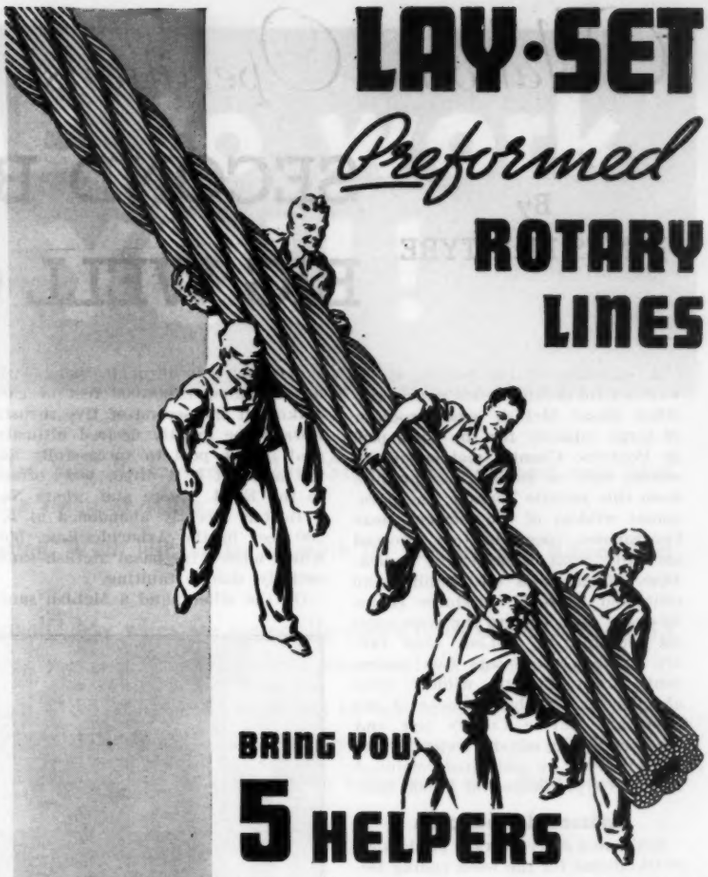
Tepetate Field

The Tepetate field, Acadia Parish, received its fifth producer by the completion of Continental Oil Co. No. 1 A. D. Marcantel which flowed 360 bbls. in 16 hours through a three-sixteenths inch choke from sand bottomed at 8,324 feet. Location is in section 29-7s-2w.

L. R. Wilhite has made location for an interesting test at the Starks dome, Calcasieu Parish. It is No. 1 Industrial Lumber Co., situated on the southeast flank of the dome and located 675 feet west and 100 feet south of the NE cor. NE SE section 19-9s-12w. Several tests have been drilled in quest of flank production but all have been abandoned. The only activity at the dome is Gulf Refining Co. No. 38 Lutcher Moore which is below 3,665 feet in sand and rock.

Union to Expand

EDMONTON, Alberta, Dec. 14.—Union Oil Co. of Canada, Ltd., is planning to extend its system of service stations in Edmonton and northern Alberta.



LAY-SET
Preformed
ROTARY
LINES

BRING YOU
5 HELPERS

Because Lay-Set Rotary Lines are preformed, and therefore free of service-shortening internal stress, Lay-Set brings you five important helpers:

1. Lay-Set whips less at high speed; can be spooled faster.
2. Lay-Set always spools tightly, and resists piling up and crushing on the drum.
3. Lay-Set is the *fastest* line on the market; returning the idle block in much less time.
4. Lay-Set does not require backtwisting.
5. Lay-Set lasts longer—makes more hole; thus saving replacement costs, labor and shut-downs.

These are 5 big helpers and there are at least a dozen more. They are due to the fact that every wire and strand in Lay-Set is relaxed—*preformed*. This difference in manufacture makes a tremendous difference in line service. Write today for complete information.

HAZARD WIRE ROPE COMPANY, Inc.
Wilkes-Barre, Pennsylvania
An Associate Company of American Chain Company, Inc.
In Business for Your Safety
District Offices: New York, Chicago, Philadelphia, Fort Worth, San Francisco, Pittsburgh, Denver, Los Angeles, Birmingham, Tacoma

ACCO

LAY-SET
Preformed ROTARY LINES

World's Largest Marketers of
PETROLEUM COKE
● INQUIRIES AND OFFERS INVITED
GREAT LAKES FUEL CORP.
500 Fifth Avenue, New York, N. Y.
Distributors for GREAT LAKES COAL and COKE CO.

Oklahoma Operations

By JAMES McINTYRE

SECOND BASAL McLISH WELL; BIG WELL CROWDING CAPITOL

A summary of the results of the week's field developments shows: Another Basal McLish sand producer of large capacity for the Fitts pool in Pontotoc County, making it the second well to successfully produce from this prolific horizon; the paramount wildcat of the moment, near Centrahoma, continues to proceed carefully with some slight indications of gas and oil staining; an estimated 9,000-bbl. producer comes in closer than ever to the state capitol building; a McLish sand failure in the Fitts pool; two important Grant County wildcat tests abandoned; the abandonment of the important Garvin County test and the completion of six wells in the Fitts pool for an estimated combined first day's production of 37,000 bbls.

Estimated Production

Estimated daily average production of Oklahoma for the week ending December 14 and for the preceding week is as follows:

	Barrels	
	Dec. 14	Dec. 7
Allen	6,800	6,900
Asher-West Asher	975	975
Burbank	3,200	3,000
South Burbank	11,500	11,100
Balance Osage	24,000	24,000
Blackwell	4,850	4,800
Bristow-Slick	3,750	3,700
Chandler	4,100	4,200
Crescent	5,350	5,050
Cromwell	4,100	4,025
Cushing-Shamrock	12,400	12,400
Duncan district	4,130	4,150
Edmond	5,250	5,950
Fish	11,925	11,000
Fitts	37,125	30,300
Gray	1,675	1,600
Graham	4,050	4,000
Healdton	9,300	9,300
Hewitt	4,600	4,575
Holdenville	1,275	1,250
Keokuk	4,560	1,625
Konawa	1,750	1,700
Lucien	10,500	10,250
Marshall-Lovell	950	875
Oklahoma City	137,175	114,225
Papoose	1,175	1,125
Polo	3,450	3,500
Sasakwa and townsite	3,000	3,450
Sholem-Alechem	3,850	3,850
Seminole field:		
Bowlegs	3,550	3,850
Carr City	6,350	2,900
Earlsboro	7,925	7,675
South Earlsboro	575	1,125
East Earlsboro	9,825	9,575
Little River	15,075	14,000
East Little River	900	975
Maud	1,000	800
Mission	2,750	2,700
Seminole	12,525	11,575
East Seminole	1,250	1,425
Searight	4,525	2,725
Total Seminole	71,550	65,325
St. Louis-Pearson	22,025	19,675
Tatums	4,075	4,050
Tonkawa-Garber-Thomas	5,850	5,850
Wewoka	3,700	3,600
Yale-Jennings	4,250	4,100
Other pools	56,220	52,975
Total Oklahoma	504,525	458,550

Pontotoc County

The Fitts pool in Pontotoc County, Oklahoma, enhanced its potential possibilities of basal McLish sand production when Fleetborn Oil Co. No. 2 J. M. Smith, NE SE NE section 31-2n-7e, topped the "big" pay sand at 4,380 feet and at a total depth of 4,423 feet, was washed in at 11 a.m. Friday, flowing 805 bbls. of oil the first hour and 796 bbls. the second hour through casing with an estimated 13,000,000 feet of gas, making it the second of five thrusts toward the greatly desired ultimate goal in the pool to successfully hit its mark. It is a direct west offset to the E. H. Moore and others No. 3 Benton recently abandoned at 5,230 feet in the Arbuckle lime, but which missed the basal McLish sand entirely, due to faulting.

On the other hand a McLish sand failure was occurred when E. H. Moore and others No. 9 Akers, SW SE NE section 36-2n-6e, set 7 inch pipe at 4,375 feet and drilled into the McLish sand at 4,597 feet, total depth, encountering salt water. Attempting to plug back to an oil showing in the top of the sand the drill pipe became stuck and the well was abandoned.

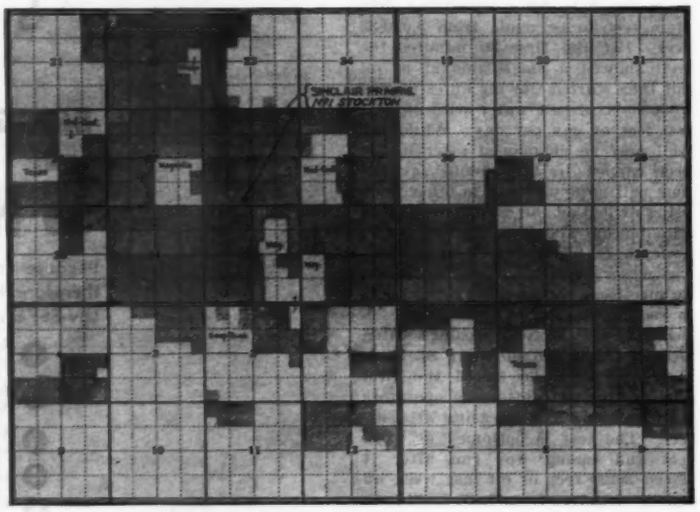
McBride, Inc. and Carter Oil Co. No. 1 Chester, SE NE section 26-4-4, a wildcat test about 7 miles west of Ada, encountered a hole full of sulphur water in Bromide sand at 1,879 feet, total depth, and the test is abandoned.

Blackstock Oil & Gas Co. and others No. 2 Lewis, SE cor. section 19-2-7, is completed for a potential of 505 bbls. of oil in the Bromide after treatment with 4,000 gallons of acid. The log showed Bromide lime 4,250 feet; first sand 4,350 feet; second sand 4,420 feet; total depth 4,437 feet, hole full of water; plugged back to 4,397 feet and completed.

Other Fitts Completions

E. H. Moore and others No. 1 Norris Royalty Co., NW NE NE section 35-2n-6, had Bromide lime 4,275 feet; first sand 4,360-95 feet; second sand 4,420-40 feet, total depth; plugged back to 4,403 feet on account of water, and acidized with 8,000 and 6,000 gallons; potential 2,006 bbls. of oil and 1,170,000 feet of gas; completed.

Burke-Greis Oil Co. No. 1 Chambers, NE NW section 36-2-6, formerly a Bromide sand producer at 4,444 feet, total depth, was plugged back to 4,324 feet in the Bromide and after acidizing with 3,000 and 6,000 gallons was recompleted, flowing 675 bbls. of oil in six hours through tubing. Potential just prior to plugging back was 3,446 bbls.



Sinclair Prairie Oil Co. deep test in section 26-6s-2w, Love County. The shaded portion is the company's block of over 8,500 acres

J. E. Crosbie, Inc. and others No. 1-A Burris, NE SE NW section 27-2-7, last week's extension of 1 mile to the east for the Fitts pool, has been given a potential rating of 3,896 bbls. of oil. Bromide lime was topped at 4,045 feet, first sand 4,140 feet, second sand 4,200 feet and total depth 4,260 feet.

Fleetborn Oil Co. and Simpson No. 1 Wooley, NW SE section 28-2-7, was completed for a potential of 4,463 bbls. of oil. Bromide lime lay at 3,850 feet; first sand 3,965 feet; second sand 4,035 feet; McLish lime 4,058 to 4,284 feet, total depth.

Skelly Oil Co. No. 1 Park College, SW NE section 28-2-7, potentialed 3,874 bbls. of oil with 1,150,000 feet of gas. Bromide lime was found at 3,880 feet; first sand 3,985 feet; second sand 4,060 feet; McLish lime 4,090 feet; first sand 4,145-55 feet, second sand 4,200-28 feet, total depth 4,275 feet. This well extended the McLish sand production a quarter mile east.

Carter Oil Co. No. 17 Richards, NW SE SE section 30-2-7, formerly completed as a Bromide producer at 4,121 feet, was recompleted in the McLish sand for a new potential of 2,725 bbls. of oil. Potential prior to deepening was 2,552 bbls. McLish sand production is coming from 4,115-4,375 feet, total depth.

New Operations

There were 12 new operations started in the Fitts pool and one started in the Allen pool to comprise all of the new work reported during the week in Pontotoc County. They follow: Magnolia Petroleum Co. No. 1 Farnham, NW SW NE section 27-2-7, cellar; same company's No. 2 Farnham, NW SE NW, same section, location; same company's No. 1 Metropolitan Life Insurance Co., SW NW NE section 27-2-7, rig materials; Simpson & Feld's No. 1 Holkum, SW SW NE section 27-2-7, cellar; Sinclair Prairie Oil & Gas Co. No. 3 Burris, SW NE NW section 27-2-7, cellar; Carter Oil Co. No. 7 G. Smith, SE NE SW section 28-2-7, building rig; same company's No. 8 G. Smith, SE NW SW, same section, cellar; E. H. Moore and others No. 2 Mack, SE NW SE section 28-2-7, cellar; Skelly Oil Co. No. 5 Park College, SE SW NE section 28-2-7, rig; Carter Oil Co. No. 9 Richards, SE NE SE section 30-2-7, old total depth 4,145 feet, rigging up to deepen; same company's No. 10 Richards, SW SW SE, section 30-2-7, old total depth 4,085 feet, building rig to deepen; same company's No. 16 Richards, NE SW SE section 30-2-7, old total depth 4,142 feet, deepening at 4,190 feet, and Sunray Oil Co. No. 3 (Twin) Millner, NW SW NW section 16-5-8, drilling 150 feet.

Oklahoma County

Oil was pouring forth at the very outskirts of the capitol grounds as the week ended when British-American Oil Co. No. 1 Piersol in the extreme SE cor. section 22-12-3w, one block east of the state capitol building, flowed 549 bbls. in two and one-half hours from Wilcox sand 6,342-62 feet. A gauge of the last half hour of the flow was 186 bbls., or at the rate of 9,000 bbls. per day accompanied with 18,000,000 feet of gas. The connections were being badly cut and the well was shut in.

Phillips Petroleum Co. No. 4 Traders Compress, 943 feet north and 990 feet west of the SE cor. SW quarter section 36-12-3w, in the fault zone, established a potential of 7,900 bbls. of oil with 8,000,000 feet of gas. It showed 1 per cent salt water at the beginning of the production test which increased to 2 per cent at the end of the six-hour flow. Production is from Wilcox sand topped at 6,288 feet.

Westgate Oil Co. was digging cellar for its No. 14 Carey, 180 feet south and 218 feet east of the C section 34-12-3w, on Lot 8, Block 1,

Put ME to work for YOU!

WHY NOT? I'm "Flex-Set" Preformed Yellow Strand, the toughest rope that ever ran and landed a string of casing.

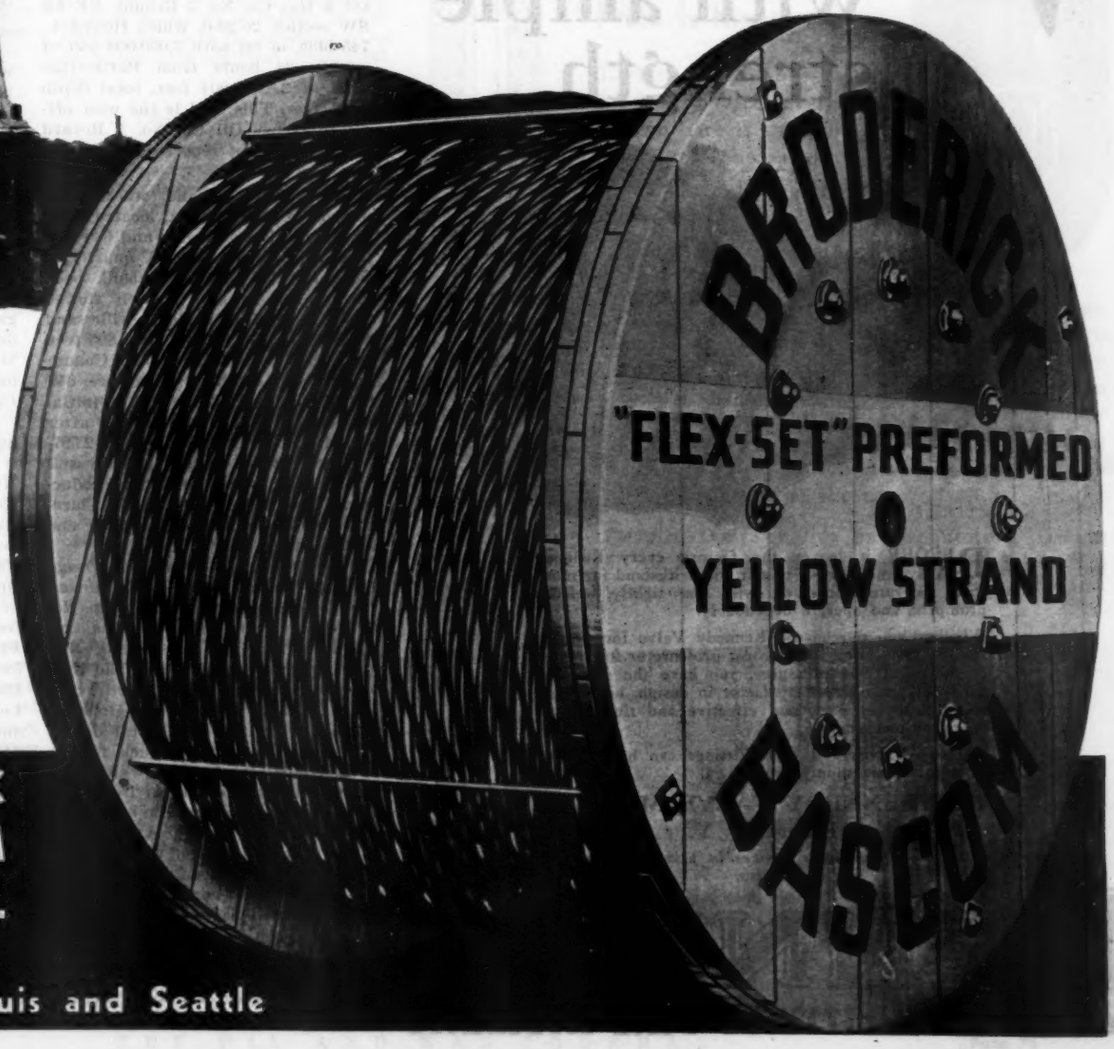
Maybe you think I'm boasting. Well, just put me to work for you and you'll soon find out how tough I am.

And why shouldn't I be tough? My wires are especially drawn to Broderick & Bascom's specifications. And are those specifications high—and exacting! I'll say they are!

I'm preformed, which adds a lot of other good qualities to my toughness. It makes me limber—easy to handle and install. What's more, by preforming, I'm practically pre-broken in, so you can work me hard and fast soon after putting me on. And how I do resist crushing on drums! You'll be surprised.

Put me to work for you right now. I'm tough.

T-20



The Continental Supply Co.

Mid-Continent Distributors

Adequate stocks in all active fields

BRODERICK & BASCOM ROPE CO.

ST. LOUIS

Factories: St. Louis and Seattle

of the Phillips Mead Addition to Oklahoma City.

In the Britton area of Oklahoma County, Slick-Urschel, Inc. and associates No. 1 Community McGrew, SW cor. section 20-13-3w, is completed in Simpson dolomite 6,674-90 feet, total depth, from which it potentialed 7,000 bbls. of oil with 10,000,000 feet of gas after an acid treatment of 3,000 gallons.

The same operators' No. 1 Community Church, NE NE section 30-13-3w, has been acidized with 5,000 gallons. It made 48 bbls. of oil in three and one-half hours before being acidized from the second Wilcox sand 6,770-72 feet, total depth.

Sinclair Prairie Oil & Gas Co. No. 1 Tinsley, SE NW SE section 17-13-3w, was drilling plug after cementing 9⅝-inch casing at 6,541 feet, with total depth at 6,550 feet.

Sinclair Prairie Oil & Gas Co. and others had rig corners set and were digging pits for their No. 1 Marvel in the NW SW NE section 21-10-2w, in the Moore pool community block.

Hughes County

Roger Brothers No. 1 Oliphant, SE SW SW section 1-9-8, in the Olympic pool, Hughes County, had Senora sand from 1,700-57 feet, total depth. It was shot with 80 quarts and flowed 301 bbls. of oil in six hours through casing on its completed gauge.

Manahan and others No. 3 Oliphant "B," SE NW SW section 12-9-8, had Senora sand 1,715-77 feet, total depth, which put 380 bbls. of oil in the tank in eight hours after a 70-quart shot. It is a completion.

There were four new operations started in the Olympic pool: Blackwell Oil & Gas Co. No. 3 Oliphant, NW SE SW section 1-9-8, rigging up rotary; Rogers Brothers No. 3 Oliphant, SW cor. section 1-9-8, location; George Manahan and others No. 4 Oliphant "B," NE SE section 11-9-8, rig on ground, and Shepard and others No. 3 Oliphant, SW NE SW section 12-9-8, a rig.

Pottawatomie County

Joe Hicks and others No. 1 Brandenburg, SE NW section 21-7-4, St. Louis pool in Pottawatomie County, is completed in Hunton lime 3,650-3,981 feet, pumping 120 bbls. of oil in 24 hours after using 2,000 gallons of acid to agitate the formation. Total depth is 3,985 feet in Sylvan shale.

Seminole County

In the Fish pool, Seminole County, Champlin Refining Co. No. 8 See, SE NW SE section 30-7-8, is completed for a very small well in Simpson dolomite from 4,106-08 feet, pumping 10 bbls. of oil and 200 bbls. of water in 24 hours after acidizing that formation with 2,000 gallons. It was a second Wilcox sand failure at 4,253 feet and plugged back to the Simpson horizon and completed.

New operations started in Seminole County were: Carter Oil Co. No. 1 Badger, C E half SW SW section 11-10-6, rig on ground; Gypsy Oil Co. and others No. 2 Community Scott, C W half NE NW section 11-10-6, building rig; Mid-Continent Petroleum Corp.'s No. 1 Lincoln, NE NW NW section 33-9-6, building rig, and Fleetborn Drilling Co. No. 1 Chapman, NE NW NW section 34-8-8, cellar and pits.

Garvin County

Garvin County's most recent "hot" wildcat, F. W. Suggett and A. R. McElreath No. 1 Allie Camp, NE SE section 22-4-1w, northwest of Pauls Valley, failed to find production in the Wilcox sand topped at 4,494 feet and the test is abandoned at 4,640 feet where an electric logging device indicated salt water.

Osage County

The South Burbank pool in Osage County was extended a quarter mile north by the completion of Kewanee Oil & Gas Co. No. 2 Renald, NE SE SW section 26-26-6, which flowed 1,745 bbls. of oil with 2,000,000 feet of gas in 24 hours from Bartlesville sand at 2,829-2,904 feet, total depth 2,905 feet. This well is the west offset to Gypsy Oil Co. No. 1 Revard which was first reported on production last week.

Carter Oil Co. and others completed No. 3 D. Munza, located 1,295 feet from the south line and 660 feet from the west line of NW quarter of section 2-25-6, South Burbank pool, during the week. The well flowed 286 bbls. of oil from Bartlesville sand at 2,825-92 feet, total depth 2,895 feet.

In the Naval Reserve pool, Champlin Refining Co. No. 2 Claremore, SW SE NE section 17-24-7, had an initial production of 100 bbls. of oil after shooting Bartlesville sand at 2,597-2,624 feet with 40 quarts. This well is the north offset to Lewis Production Co. and Texas Co. No. 2 Claremore which extended the pool one location west.

The Bandwheel pool of Osage County had one completion during the week, Peters Petroleum Corp. No. 5, 810 feet from the south line and 300 feet from the east line of NW quarter of section 33-24-9. The well was deepened from the Bartlesville sand 2,134-85 feet to the Hominy-Wilcox at 2,513-40 feet, total depth. The hole was plugged back 6 feet to 2,534 feet to shut off water and pumped 15 bbls. of oil on its initial test from both Bartlesville and Hominy-Wilcox sands.

Five new operations were started in Osage County, as follows: Gypsy Oil Co. No. 2 Revard, SW NW SE section 26-26-6, location; Kewanee Oil & Gas Co. No. 5 Renald, SE NE SW section 26-26-6, digging cellar; Peters Petroleum Corp. No. 8, approximately SE NW NE section 24-24-7, rigging up to deepen from total depth 758 feet; G. B. Labadie and others No. 1, SW SW NE section 14-24-8, rigging up to deepen from total depth 1,956 feet, and J. R. Higgins No. 17, approximately NE SW SE section 25-23-8, location.

Southwestern Oklahoma

Jackson County's Altus pool had one completion in Gypsy Oil Co. No. 7 Kelly, SW SE NE section 10-1-20w, which pumped 62 bbls. of oil the first 24 hours from granite wash encountered at 1,408-15 feet and at 1,473-1,514 feet. The well was bottomed at 1,516 feet in brown shale.

Burns & Moore No. 1 Webster, wildcat test located in the C NE NE section 2-6-17w, Kiowa County, had a machine on location and were drilling at 23 feet. This test is near the Gotebo pool.

One of Cotton County's two wildcat tests, C. A. Yoakum No. 1 Hunter, 150 feet from the south line and 150 feet from the east line of NE quarter of section 9-3s-13w, was dry and abandoned at total depth 3,015 feet in lime. The test encountered dry sand at 2,341-64 feet and at 2,660-79 feet.

In Comanche County's Lawton pool, Joe Gail Drilling Co. lost the hole on its No. 1 Wiseman, 150 feet from the north line and 1,170 feet from the west line of the NE quarter of section 29-2-10w, at a total depth of 725 feet in shale, and moved the machine 55 feet west for the No. 1-A Wiseman which is drilling at 28 feet. No. 1 Wiseman had an estimated 6 bbls. of oil from sand at 342-51 feet and showed gas in sand at 425-28 feet.

Stephens County

Stephens County completed one oil well during the week in the Loco pool, Raisen Brothers No. 1 Price, located 160 feet from the south line and 1,160 feet from the east line of the SW quarter of section 10-3s-5w, pumped 60 bbls. of 26 gravity oil the first 24 hours from sand at 1,446-52 feet, total depth. The Stahl Petroleum Co. was unable to shut off water in its No. 1-A Calloway, SE SE NE section 17-1-8w, after encountering an estimated 6,000,000 feet of gas in sand at 2,351-98 feet, total depth, and abandoned the test. W. M. Angle and others abandoned the location for their wildcat test, No. 1-A Dook, SE SW SW section 1-1s-5w.

Four new wells were started during the past week in Stephens County and all are drilling below 100 feet. McAlester and others No. 2 Leach, 150 feet from the south line and 510 feet from the east line of NW quarter of section 11-2s-8w, is drilling at 150 feet with rotary tools after setting 10-inch casing at 21 feet. Westheimer & Daube are drilling at 125 feet with a machine on their No. 11 Fransley, SW NE NE section 34-1s-5w. Same operators are drilling at 150 feet with machine on their No. 2 Lewis, 510 feet from the south line and 810 feet from the east line of SE quarter of section 4-2s-5w. L. A. Wilkins No. 7 Crump, 510 feet from the north line and 150 feet from the east line of NE quarter of section 15-2s-5w, machine drilling at 370 feet.

Carter County

Carter County received one new oil well and two dry holes during the week. In the Wildcat Jim pool, Samedan Oil Co. No. 1 Eaves, SW SW NE section 6-2s-2w, flowed 275 bbls. of 26 gravity oil the first 24 hours from sand series at 1,710-1,948 feet,

Valves with ample strength

BEFORE it leaves the factory every Kennedy Valve must prove that it will withstand far more than its rated pressure, will seat tightly, release promptly, and operate dependably.

Whether you purchase a Kennedy Valve for 400-lb., 700-lb., 1000-lb. or 1600-lb. test pressure or for lighter or more extreme pressures, you have the same security of generous safety factor in design, high grade metal in every part, and effective and time-proven operating mechanism.

Kennedy Valves and Pipe Fittings can be obtained from your local supply house.

THE KENNEDY VALVE MFG. CO.
Elmira, N. Y.

Warehouses and Sales Offices in principal industrial centers.

KENNEDY
VALVES-PIPE FITTINGS-FIRE HYDRANTS

total depth, enhancing the possibilities of the pool. Mudge Oil Co. encountered dry sand at 2,722-52 feet in its No. 6 Majors, SW NW SE section 25-1s-3w, and abandoned the well at a total depth of 2,778 feet in shale. McHenry and others No. 1 Parrish, SW SE SE section 22-2s-2w, was dry and abandoned at total depth 1,133 feet.

Three new operations were started in the Wildcat Jim area of Carter County during the past week, as follows: Three Keld and others No. 1 Eaves, SW SW NW section 4-2s-2w, which set 8-inch casing at 40 feet and is drilling at 50 feet with small rotary; Maxine Oil Co. No. 1 Eaves, SW cor. SW SW NE section 5-2s-2w, which has derrick up and is moving in tools, and Coline Oil Co. No. 4 Higgins, NW NW NE section 7-2s-2w, which is deepening from old total depth 2,450 feet and at present is drilling 2,483 feet in shale. In the Healdton pool, Schermerhorn Oil Co. is drilling at 800 feet in its No. 35 fee, located 510 feet from the south line and 210 feet from the west line of NE quarter of section 5-4s-3w.

Marshall County

Neff & Godfrey abandoned their No. 2 Stagsdell, approximately NW SE NW NW section 1-5s-6, at 285 feet on top of the Tulip formation. This was a wildcat test drilled for geological information in northeastern Marshall County.

In the Isom Springs pool of Marshall County, G. M. Felts No. 1 Felts, SE NW NW section 6-8s-6, pumped 25 bbls. oil from sand encountered at 509-514 feet, total depth. Kingston Oil Co. staked location for its No. 2 Felts, approximately SW NE NW section 6-8s-6.

Northern Oklahoma

In Kay County's Dilworth pool, the Kansas-Oklahoma Oil & Gas Co. completed its No. 1-A Mason, C SE SE section 6-28-1, for an estimated 200,000 feet of gas at a total depth of 685 feet.

Two of Grant County's important wildcat tests were abandoned. L. H. Wentz and others abandoned No. 1 Wirtz, located in the SE SE NW section 22-28-4w, about 7 miles northwest of the Webb pool, at a total depth of 5,321 feet in Simpson dolomite. The test had the top of the Viola lime at 5,286 feet and the top of the Simpson formation at 5,300 feet. Helmerich & Payne abandoned No. 1 Crouse, C NE SW section 29-25n-8w, after encountering dry Wilcox sand at 6,615-84 feet, total depth. They plugged the well back to 4,550 feet, but tested only a small show of oil and water from the Tonkawa formation at that depth.

South of Grant County in southeastern Garfield County's Brown pool, Sunray Oil Co. No. 1 Shanks, SW SW NE section 10-20-4w, set casing on top of the second Wilcox sand which was encountered from 5,952-58 feet, total depth. The cement plug was drilled and the well is now being bailed 2,000 feet off bottom.

In the southwest corner of Noble County in the Lucien pool's south extension zone, Stanolind Oil & Gas Co. and Amerada Petroleum Corp. staked two new locations during the past week. They were building rig for their No. 1 Pfieffer, 1,000 feet from the south line and 660 feet from the east line of SW quarter of section 33-20-2w, and rotary tools were being moved in for their No. 1 Sharp "A," located in the C S half SW NW section 34-20-2w.

Two wells are at interesting depths in the recently discovered Stillwater pool of Payne County. Amerada Petroleum Corp. and others are rigging up cable tools at a total depth of 4,255 feet after setting 7-inch casing at 4,248 feet, 5 feet in the Viola lime, on their No. 1 Clingenpeel, NW cor. section 34-19-3. The same operators are waiting on cement to set in their No. 1 Gassoway, NE cor. section 33-19-3, after running 7-inch casing in the Viola lime encountered from 4,230-42 feet, total depth. This pool has two completions to its credit, both being completed by Amerada Petroleum Corp. and others in the Wilcox sand for a combined initial production 1,570 bbls. oil in 24 hours.

The Texas Co. is rigging up rotary tools on its wildcat test, No. 1 Andrew, NW NE SE section 28-14-5, about 3 miles south of the Davenport pool in Lincoln County.

Okmulgee County

Greenfield and others No. 1-A Taborn, SW NE NW section 25-13-12, Okmulgee County, encountered water sand from 2,220-60 feet, total depth, and was abandoned. Anderson & Kerr abandoned the location for their No. 1-A Sullivan, NW SE SW section 5-12-12.

Two new operations were started during the past week in Okmulgee County, as follows: Ford and others are spudding their No. 1-A McIntosh, NE SW SE section 10-13-14, and Sinclair Prairie Oil Co. is rigging up machine on its No. 2 Palmer, C NW SW section 29-13-12, preparatory to deepening from old total depth 2,365 feet.

Okfuskee County

Okfuskee County's Deaner pool has one new operation, Keaton & Gold No. 1-A Likowski, SE NE NW section 26-11-11, which is drilling at 1,655 feet. W. B. Looney is drilling at 1,568 feet in his No. 1 Looney, SW NW SW section 13-10-11, Weleetka pool.

Important Deep Tests

Late information on three of the most important deep tests in Oklahoma shows Carter Oil Co. No. 1 Thompson, in section 34-2-9, Coal County, drilling at 6,604 feet in Dense Dolomite. It had a small oil showing at 6,585 feet. The Carter Oil Co. No. 1 Williams in section 27-2s-3w, Fox pool, Carter County, was washing over at 4,970 feet, having recovered 4,840 feet of the drill pipe which was stuck in the hole at a great depth. This well showed a 10,000-bbl. production at 8,088 feet. The production was mudded in so that the drill pipe could be recovefed and casing run to the top of the pay, but the crew has been working for nearly two months trying to recover the drill pipe. The Sinclair Prairie Oil Co. has pipe stuck in the hole in its deep test in section 26-6s-2w, Love County, which is at a total depth of 7,165 feet. The crew has recovered the pipe down to 6,860 feet.

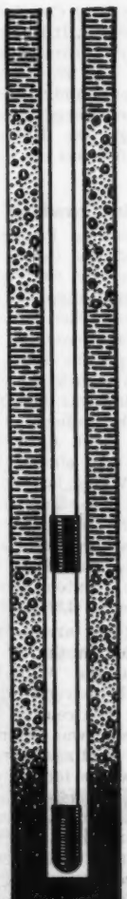
J. E. O'Hea, of Oklahoma City, writes that he has derrick up for No. 1-A Doris, SE SW section 31-10-7, Seminole County, and let the contract to drill. This is on a lease formerly owned by Twin Oaks Oil Co., recently purchased by Mr. O'Hea.

Men in Foreign Fields at Houston Expo.

With the increased demand for American tools and machinery indicating the probability of a large export market for oil equipment during the coming year, the Oil Equipment and Engineering Exposition at Houston, Tex., is taking definite steps to aid in the selection of American products by foreign oil companies. Representatives of oil companies from all parts of the world are being sent individual invitations to visit the oil show which will be held in Houston, Tex., from April 20 to 25, 1936, where they will be able to study each piece of equipment thoroughly and will have an opportunity to see the tools and machinery in actual operation under field conditions.

Among the foreign oil men planning to attend the seventh annual Oil Equipment and Engineering Exposition are the following: E. J. Daly, secretary, American Club, Yenangyaung, Upper Burmah, India; John W. Klimkiewicz, petroleum engineer, S. A. Pionier Co., Truskawiec, Poland; J. A. Higgins, engineer, International Petroleum Co., Negritos via Talara, Peru; R. Kost, general drilling superintendent, Astra-Romano, Campina, Rumania; M. M. Hess, president, Hughton Oil Co., Hughton, Saskatchewan, Canada; Dave Credille, managing director, Anglo Alberta Oils, Ltd., Wainwright, Alberta, Canada; L. Steiner, dipl. ing., Berlin, Germany; I. I. Titarenko, chief engineer, Grozneft, gasoline department, Grozny, U.S.S.R.; H. R. Gilbert, tool pusher, Standard Oil Co., Prov. de Salta, Argentina; F. R. S. Henson, senior subsurface geologist, Iraq Petroleum Co., Ltd., Kirkuk, Iraq; Richard Nisbet, assistant field superintendent, Burmah Oil Co., Yenangyaung, Upper Burmah, India; Mario A. Lavarello, division contractor, Yacimientos Petroliferos Fiscales, Buenos Aires, Argentina; Dipl. Ing. C. Szabados, industrial representative, Bucharest, Rumania; Madanmohan Jain, Madanmohan Jain & Sons, Bombay, India.

LARKIN GUIDE SHOES



Not Only Assure a Good Cement Job—But Their Price Is Right!

Larkin Guide Shoes are made in several designs. Shown here is the Bakelite Type—the same material as is used in the valve and guide in the Larkin Float Shoe.

Larkin Bakelite Guide Shoes are the one sure way of landing the pipe on bottom quickly—safely and with a minimum of risk. Bakelite will not chip and crack like cement which sometimes makes it necessary to pull the pipe. Used in conjunction with one or two Larkin Float Collars, you have the ideal cementing combination, and are assured of a good cement job at the shoe.

Despite their quality and reputation, Larkin Guide Shoes are surprisingly low in price. Investigate!

See Composite Catalog of Oil Field Equipment, Pages 542 and 543.

At all Supply Stores
Warehouse stock at Houston, Texas, Tulsa, Okla., and in East Texas.

LARKIN PACKER CO.
ST. LOUIS

LARKIN PACKER CO.

Eastern Field Report

CABOT DRILLING IN VIRGINIA; OLD EASTERN FIELDS ACTIVE

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 16.—After a long lapse, another test is drilling in Virginia. In Buchanan County, near the Kentucky border, Godfrey L. Cabot, Inc., is drilling a test on the National Shawmut Bank lease on the waters of Guest Fork, located near the mouth of Sycamore Creek. It is on the Iaeger Quadrangle. The present depth is 1,950 feet.

All districts of the lower Pennsylvania Grade fields continue in interest. During the week 29 operations were completed, resulting in 10 oil wells, 9 dry holes and 10 gas wells. The oil wells had an initial production of 75 bbls.

SOUTHEAST OHIO

In Athens County, Ohio, Hocking Valley Drilling Co. and others completed a test on the New York Coal Co. lease in Fraction 36, Dover Township, in the Clinton sand at a depth of 3,817 feet. It is a gas well gauging 501,000 feet a day. Near Fisher in section 36, Alexander Township, H. O. Bode and others completed a test on the M. A. Byeforeman farm in the Grit at a depth of 1,180 feet. It produced 2 bbls. the first day after shot but there is considerable water in this sand which may prevent commercial production.

In Belmont County, in the NW quarter of section 4, Washington Township, E. L. Johnston and others completed No. 8 on the Mary O. McMinnis farm in the shallow Murphy sand at 90 feet. After a shot, it produced about 2½ bbls. the first day.

In Coshocton County, Frank Lyons and others drilled a test on the Della Fair farm in the SE quarter NE quarter section 13, Monroe Township. It found the Clinton sand dry at a depth of 3,362 feet. It may be deepened.

In Guernsey County, Frank Lyons drilled a dry hole on the Charles Lent farm in section 18, Richland Township, through the Berea grit to a depth of 1,530 feet.

In Holmes County, S. J. Bell and others completed a gasser on the Cliff Finley farm in sections 13-18, Mechanic Township, in the Berea sand and a depth of 812 feet. It gauged 85,000 feet a day, with no showing of oil.

In Medina County, E. R. Edson & Son Co. completed No. 70 Ed G. Miller, Tract 15, Lot 12, Chatham Township, in the Berea grit at a depth of 515 feet. After the shot, it produced 3 bbls. the first day.

In Monroe County, Jess Delong and others completed a well on the C. F. Baker farm in the SE quarter of section 5, Summit Township. It was drilled in the Injun sand, depth 1,450 feet, and produced 2 bbls. the first day, after shot.

In Noble County, Barry Rich and others completed No. 5 Jordan Stranathan in section 25, Buffalo Township, in the Berea grit at a depth of 1,480 feet. It produced 1 bbl. the first day, naturally. In the SW quarter of section 22, Elk Township, B. C. Robinson and others completed No. 9 on the Anna Carnet Walker farm through the Germantown sand to a depth of 945 feet. It was dry and is located 130 feet due south of the No. 4 on the Carl Heister farm.

In Washington County, the Peoples Savings Bank of New Matamoras, Ohio, Account No. 80 completed No. 4 on the Goodman Brothers lease on the Ohio River in section 31, Newport Township, in the First Cow Run sand at a depth of 630 feet. It started off at 10 bbls. a day, naturally. In the NE quarter of Lot 42, Salem Township, Montgomery and Miller drilled No. 13 on the George Montgomery farm through the Keener sand to a depth of 1,086 feet. It was a dry hole.

Deep Showings in Crawford

Of prime importance in Pennsylvania is the test of the Carnegie Natural Gas Co. on the Gertrude Scott farm in South Shenango Township, Crawford County. The top of the Newburg sand was reached at 3,985 feet. Six feet in the sand a showing of gas was struck which, while enough to light, was insufficient for a test. The bailers also brought up an oily sand, dark in color and having an odor similar to the sour Lima oil. Water has now intruded, and while the hole has been deepened to 4,025 feet, a string of 5¼-inch casing has been ordered which will be set and then the test drilled down to the Clinton sand, which is expected around 4,300 feet.

John Galey and others are working towards completion in the Oriskany sand well on the William Graham farm in South Beaver Township, Beaver County. The cement in the bottom of the casing was drilled out into the Oriskany sand again and the gas pressure blew the tools several hundred feet up the hole. With care the line was taken up and the tools brought out of the hole, which were suspended by two strands of the cable only. There was again a surge of the accumulated water, but it is hoped that a water siphon will be able to take care of it. The well is now being tubed for a test of the rock pressure, which is presumed large.

In South Union Township, Fayette County, William Snee and others have reached 5,150 feet in the deep test on the Summit Hotel property on Chestnut Ridge. Fair progress is being made.

In Greene County, Myers, Hoskinson and others completed deepening the test on the McClelland-Wright lease in Perry Township at a total depth of 3,011 feet. The Bayard sand was at 2,892-3,007 feet with gas showing at 2,984 feet. Oil showed at 2,998-3,002 feet. It was shot in the gas pay at 2,984 feet and it was given two shots in the oil pay. It is estimated for 2 bbls. a day.

In Amwell Township, Washington County, the Carnegie Natural Gas Co. drilled the second test on the C. W. Dunn farm to a total depth of 3,011½ feet. It was a dry hole. In this township, Moore-Orrill & Co. are spudding in the No. 6 on the G. L. Walker farm. The New Oil & Gas Co. shut down for gas at 2,065 feet in the test on the Clarissa Ramsey farm. This company reached 600 feet in the test on the George Thomas farm and shut down for repairs.

In Allegheny County, Ferguson & Henderson have a rig on the Lucy Schramm farm in McCandless Township. In Hampton Township, O. Miller is down 1,450 feet in the test on the Hancock heirs farm. In Richland Township, Burns & Anderson have a rig up for a test on the Helwig heirs farm.

In Hampton Township, Allegheny County, the test on the Coyne farm by E. A. Bream & Co. reported as a 5-bbl. well is now showing more than double that amount. In Findlay Township, the Versoix Oil Co. has reached a depth of 1,600 feet on the A. McBride farm.

In Beaver County, R. B. Abrams is drilling in the sand in the No. 7 on the Clara Walton Cook and others lease in Greene Township.

In Greene County, J. I. Eddy & Co. shut down at 1,730 feet cementing the hole in the No. 3 on the Charles Fordyce farm in Gilmore Township. S. B. Clovis and others report the Pittsburgh Coal on the Charles B. Fordyce farm at 902 feet and drilling.

In Morris Township, Greene County, the Penn Ohio Oil & Gas Co. are down 1,325 feet on the Frank Toland farm. The Murphy sand was at 780-900 feet with a showing of gas at 810-815 feet. In Springhill Township, James H. Null, agent, is drilling at 675 feet on the David Null No. 3.

In Richhill Township, Greene County, Lewis & Co. are drilling out the cement in the test on the Samuel Chess farm. The depth 1,130 feet. Burley Wright is ready for the rig on the D. C. Yoders farm test.

In Washington County, E. H. and J. B. Tague have reached 2,290 feet deepening the test on the Hiram McClain farm, South Franklin Township. Here William Bungard & Co. are ready to start the Clyde Hineman test. The Carnegie Natural Gas Co. is drilling at 2,480 feet on the John Dodds farm. H. G. Whitfield reached 430 feet on the Judson Iams farm and remains shut down.

In East Finley Township, Washington County, Parkinson & Dague are drilling at 425 feet the test on the Chris Ealy farm. In West Finley Township, the Natural Gas Co. of West Virginia has reached a depth of 1,350 feet on the J. W. Earnest farm.

WEST VIRGINIA

Three producers were completed in West Virginia during the week. The largest was in Clay district, Ritchie County, where the West Turn Oil Co. completed No. 4 on the A. J. Glass, mapped as the Glass and Sandusky farm, in the Injun sand at a depth of 1,910 feet. The top of this formation was at 1,827 feet and the well is making 30 bbls. a day. This may be the much-sought continuation of the Lost Run pool. In Grant district, Ritchie County, Rowland and others completed the test on the Henry Boner farm in the Squaw sand and it is making 8 bbls. a day and has a volume of 50,000 feet of gas. The depth was 1,840 feet.

In Wetzel County, Curtis B. Fleming completed a second test on the C. E. Edgell farm in Church district in the Maxon sand at a depth of 2,087 feet. It is showing for 20 bbls. a day. The Pittsburgh Coal was at 900-909 feet.

Deep Tests

In Union district, Kanawha County, Godfrey L. Cabot, Inc., is drilling in the Oriskany sand in the test on the Alberta Putney farm. There is a showing of only 17,000 feet of gas at 4,711 feet. In Loudin district, this operator is treating the Oriskany sand with acid at 4,971 feet in the test on the A. F. Vorholt farm. There was only a showing of gas in this formation. In the second test on the Kanawha Land Co. the same operator is fishing the tools at 1,040 feet. Here Columbian Carbon Co. has reached 3,500 feet in the test on the S. H. Hoge farm.

In Malden district, the Columbian Carbon Co. has reached a depth of 3,825 feet in the test on the M. J. Dearing heirs farm. Godfrey L. Cabot, Inc., has reached 1,353 feet in the test on the N. B. Tompkins farm; has a rig standing on the William Tompkins heirs farm; shut down with fishing jobs at 1,870 feet on the W. D. Lewis farm and 1,265 feet on the Campbells Creek Coal Co. No. 9.

In Elk district, Kanawha County, the Columbian Carbon Co. is drilling at 4,155 feet in the test on the W. L. Burdette farm. There was a showing of 120,000 feet of gas in the Shale at 4,118 feet. This company has reached 4,828 feet in the second test on the G. and D. Copenhaver farm and has the rig standing for the No. 3 and is rigging up the No. 4. On the W. H. Baxter and others lease, this company has moved in the material for

the rig. V. C. Smith and others are fishing at 4,982 feet on the island, the Matheney Wertz and others lease. It is believed that this location is directly on a fault as at this point there has been 203 feet of sand from the presumed top of the Oriskany sand.

Other Operations

In Boone County, the Owens Illinois Glass Co. is building a rig for No. 3 J. G. Roberts in Washington district. In Sherman district the Pure Oil Co. is grading a road to the location for No. 79 on the Federal Coal Co. lease.

In Cabell County, Petry and others have rig up on the Hans-Watts Realty Co. lease in Guyandotte district. A. O. Sears is drilling on the Lucy A. Woods farm. C. G. Peck and others are drilling on their own property. In Grant district, the Shale Gas Co. is drilling on the W. Carter farm. In McComas district, the Salt Rock Gas Co. is rigging up a test on the A. O. Rousey and others farm.

In Calhoun County, Harley Jarvis has made a location on the A. A. McClain farm in Washington district. In Lee district, Lyle S. Ayers is building a rig on the Pay Parson farm.

In Clay County, the Virginian Gasoline & Oil Corp. has resumed a drilling program on the Brown, Goshorn, Swan and Geary tract in Henry district. Four wells will be drilled and at present one rig is building and other material being hauled in.

In Lincoln County, the Blue Ridge Gas Co. has made a location for a test on the T. C. Collins farm on Little Buffalo Creek in Carroll district. Here the Kanawha Gas & Utilities Co. has reached 2,340 feet on the George Black farm, No .3.

In Marion County, Victor E. Tennant has made a location and is hauling in rig timbers for a test on the Mrs. E. Kuhn farm in Lincoln district. Here the Carnegie Natural Gas Co. has started deepening the No. 1 on the E. L. Morgan farm. The depth is now 2,450 feet.

In Monongalia County, the Carnegie Natural Gas Co. had reached 790 feet in the test on the F. M. Shearer farm in Cass district. In Clay district, the Moore-Tex Oil Co. is down 2,500 feet deepening the No. 2 on the Leonard Shanks farm.

In Pleasants County, the Boreland Springs Oil Co. moved in a machine on the A. C. Bills farm in Jefferson district. L. E. Dunn and others made a location on the Alex Kelly farm. In Grant district, Craig Foggin and others are drilling a second test on the J. B. Franklin farm.

In Ritchie County, Clay district, Benjamin F. Gilmore, J. B. Murphy and others have a rig up on the Warren Hayhurst farm about 1½ miles east of Ellenboro. On the head of Stewarts Run, Clay district, J. C. Connor and others have started drilling a test on the J. P. Rogers heirs farm. W. A. Bickerstaff made a location on the S. A. Kirkpatrick farm. W. D. Gribble and others have a location for a second test on the Leonard heirs farm. In Grant district, R. C. Jackson and others have started drilling on the John Lamham farm about 425 feet north of the No. 1. In Murphy district on the headquarters of Lamb Run, the Mid Penn Oil & Gas Co. is drilling on the John Shore farm. Mosser & Collins made a location on the Ada Horner farm.

In Wirt County, O. D. Jones was drilling at 1,550 feet on his own property in Spring Creek district.

Michigan Fields

(Continued from Page 66)

drilling at about 2,350 feet; Charles E. Weller No. 1 Milton P. Saxon, SW SW NW section 28-9n-3w, Fulton Township, drilling at more than 2,900 feet, and T. F. Caldwell, Inc., No. 1 William Brannon, SW NW NE section 6-9n-4w, North Shade Township, drilling at more than 3,000 feet.

V. H. Arbaugh's No. 1 William S. Gould, SW SW SE section 34-11n-4w, Sumner Township, was casing above the shallow gas sands at about 900 feet.

Three new tests were starting, two in Sumner and one in Washington Township, with a fourth drilling in North Star Township.

Genessee County

In Genessee County, Rowmor Corp. No. 1 George Gillespie, SW SW SW section 3-5n-5e, Argentine Township, was drilling below 2,000 feet in the Smith Petroleum Co. No. 1 Thomas A. Jolly, NW NW NW section 6-9n-8e, Forest Township, drilling below 2,200 feet. Both had showings of oil in the Berea.

Two other wildcats, one in Clare and the other in Clinton County, also were nearing the Dundee. They were the Sun Oil Co. No. 1 William E. Woodward, SW SE SE section 24-19n-3w, Hamilton Township, Clare County, drilling at more than 3,100 feet, and the Rex Oil & Gas Co. No. 1 J. E. Parker, NW NW NE section 32-7n-1w, Ovid Township, Clinton County, drilling below 2,500 feet.

New Locations

Alfred Doughty, former mayor of Lansing, announced plans for three gas tests in Clinton County, less than 25 miles from Lansing on several blocks of acreage including about 7,500 acres. Exact locations have not been selected but Mr. Doughty said tests would be started within 60 or 90 days.

Charles W. Teater, who opened the Porter field in February, 1933, has started a test on the Nevins lease in section 18, Long Rapids Township, Alpena County.

D. A. Burris announced plans for a wildcat test in section 5, Eaton Township and county, on the Moon lease near Charlotte.

The Associated Petroleum Co., of Detroit, last week has filed leases covering 6,349 acres in Keene Township, Ionia County, where the first test soon will be started on the Emma Rettersdorf farm. The leases are in the northwestern part of the township.

J. & L. to Expand

A plan to spend $40,000,000 for new mills and other improvements and expansion of the works of the Jones & Laughlin Steel Corp. which will give employment to several thousand men, is revealed in a letter to the corporation's stockholders. The plan, which is said to involve the most important new industrial financing in the country since the depression, includes a $25,000,000 strip and sheet mill to be erected in the Pittsburgh works, marking the entry of Jones & Laughlin into this important line of consumer products.

PROGRESS REPORT

for

1935

POINTING THE WAY

IXO

Out of ten producing fields

discovered (to date) during this year in the

TEXAS-LOUISIANA GULF COAST AREA

6 . . . COUNT 'EM . . . SIX *

were found as the result of Seismograph Reflection Surveys made by the

INDEPENDENT EXPLORATION COMPANY

2011 ESPERSON BUILDING

HOUSTON, TEXAS

*South Houston
St. Martinville
East Bernard
Cheneyville
Turtle Bay
Big Lake

Kansas Developments

By JAMES McINTYRE

ADVANCE TESTS JOIN POOLS; CLARK COUNTY'S DEEP HOLE

Development in Kansas fields the past week brought fewer completions than usual but maintained its encouraging rate of new operations started. Several of the tests in virgin areas were contingent completions and many in the inside areas were nearing their objectives.

Closing of the gap between fields by successful trend plays thereby proving that the same structure underlies both pools has resulted only recently in the consolidation of the following named pools: The Chase pool and the Beyer pool in Rice County are now known as the Chase pool; the Hollow pool and Nikkel pool in Harvey County are now the Hollow-Nikkel pool; the Isern pool in Barton County and the Steckel pool in Rice County are now known as the Steckel pool.

With the somewhat inexpensive portable rotary type drilling equipment gaining in popularity in Kansas fields combined with the high rate of successful wildcatting that has prevailed for the past few months it will not be surprising to witness several more changes in the pool set-up. Operators in the state are aggressive at this time and there should be many new pools opened in 1936.

The most important development during the past week was undoubtedly the half mile northwest extension of the Steckel pool in Rice County which attested itself as being a part and parcel of the main pool by coming in for an estimated 1,000 to 1,500-bbl. producer. The well, Mid-Continent Petroleum Corp. No. 1 Matzek, SE cor. section 25-19s-11w, just over the line in Barton County, topped Siliceous lime at 3,280 feet where the 7-inch casing was cemented. The plugs were drilled and at a total depth of 3,286 feet it was allowed to produce. An actual gauge on production was not obtainable. There have been some very good producers drilled in the pool only recently and the gap between the extension well and the pool will probably be closed.

Ellis County's New Pool

In Ellis County, Twin Drilling Co. No. 1 Goetz, SW SE secton 3-14s-17w, last week's discovery well, has established a potential on the pump of 214 bbls. of oil in 24 hours. It is producing from the Oswald lime topped at 3,273 feet with the pay streak from 3,298 to 3,303½ feet, and the owners are planning to apply acid to attempt to increase the rate of production.

In Russell County, Central Petroleum Co. No. 1 Boxberger, NW cor. section 36-15s-15w, which last week had 2,500 feet of oil in the hole from Oswald lime 3,137-51 feet, total depth, opening up a new pool, had drilled on down to 3,155 feet, with no increase in production. On a swabbing test at 3,153 feet it made production at the rate of 10 bbls. an hour. The well is located 3½ miles southeast of the Donovan pool in the same county.

Pratt County Showing

In Pratt County, about 6 miles southwest of the Cunningham pool in Kingman County, which is producing from Kansas City lime horizon, there appears to be a pool of Ordovician classification in the making. Skelly Oil Co., Empire Oil & Refining Co., Gypsy Oil Co. and Tide Water Oil Co. No. 1 Community Gilchrist, C SE quarter section 7-28s-11w, topped the Wilcox sand at 4,340 feet and at 2 feet in made 2,000,000 feet of gas, spraying a small amount of oil. This is indeed encouraging whether or not an oil well results from the test and the showing should be sufficient inducement for further testing of the area.

About 10 miles southeast of gas production in the Hugoton gas field, Piney Oil & Gas Co. encountered 6,000,000 feet of gas at 2,546 feet in its No. 1 Kennedy, C SW quarter section 10-29s-36w, Stevens County. The top of the gas sand was not determined and operators were drilling ahead.

Drilling at 6,319 Ft.

Clark County holds the record for deep tests in the state and at the present time boasts the deepest active drilling well in the Watchorn Oil & Gas Co. No. 1 Stevens, 660 feet south and 500 feet east of the NW cor. section 21-32s-21w, that is now down to 6,319 feet and drilling ahead. This is an old well completed in 1928 at 5,475 feet for 12,000,000 feet of gas and now being deepened. The deepest well recorded in Kansas by the Kansas Geological Society is also in Clark County, it being the Watchorn Oil & Gas Co. No. 2 Morrison, C NW NE section 20-32s-21w, completed as a dry hole in March, 1931, at a total depth of 6,906 feet.

Estimated Production

Estimated daily average production of Kansas for the week ending December 14 and for the preceding week is as follows:

	Barrels	
	Dec. 14	Dec. 7
Oxford City	6,675	6,075
Burrton	19,400	15,025
Ritz-Canton	7,900	7,125
Hollow-Nikkel	6,125	5,375
Voshell	4,075	4,000
Ellsworth County:		
Lorraine-So. Lorraine	8,168	8,460
Other pools	2,208	1,820
Rice and Barton Counties:		
Chase	11,390	8,230
Raymond	2,450	1,685
Steckel-Isern	5,225	5,100
Keesling	2,215	1,260
Other pools	3,392	2,420
Russell County:		
Fairport	3,135	2,180
Gorham	2,550	2,700
Russell	2,050	2,270
Other pools	1,755	2,065
Sedgwick County:		
Valley Center	1,400	1,420
Greenwich	1,500	1,665
Robbins	1,810	1,850
Eastborough	950	975
Remainder	675	740
Barton County	1,347	2,270
Ellis County	482	360
Kingman County	873	920
Stafford County	1,689	1,268
Greenwood County	10,890	10,900
Butler County	17,700	17,675
Other fields	19,071	19,567
Total Kansas	147,100	135,500

Ellis County

In Ellis County, Helmerich & Payne Drilling Co. and others abandoned their wildcat, No. 1 Kuhn, C NE quarter section 16-14-20w, Ellis County, on the west flank of the Yocemento Ridge. The test missed the objective, the Siliceous or Arbuckle lime formation, and drilled into granite at 3,990-4,002 feet, total depth. It was plugged back to an oil showing in the Kansas City lime and given a 30-quart shot at 3,547-50 feet which was of no avail.

Tom Palmer and Storm King Oil Co. have rig up for No. 3 Ruder, SW NW NE section 17-15s-18w, in the Schoenchen pool.

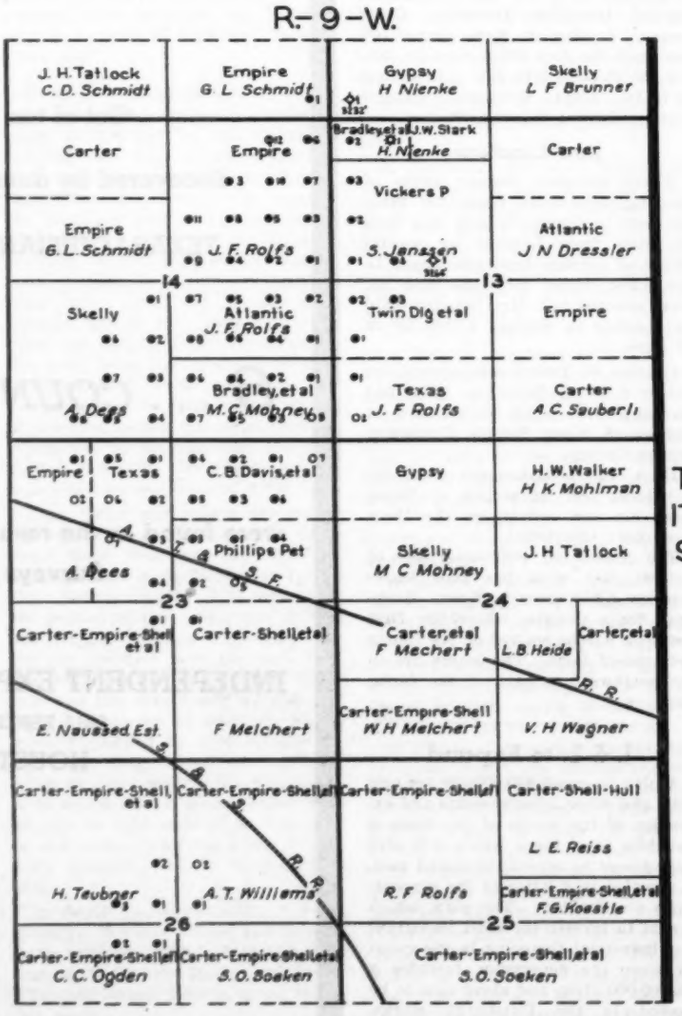
Trego County

The past week Alma Petroleum Co. and others started rigging up rotary tools at No. 2 Rhoades estate, C NW NE section 14-11s-23w, in the Wakeeney pool, Trego County.

Russell County

Stearns & Streeter acidized No. 1 Guy Miller, NE NW section 31-14s-13w, Hall pool, in the Oswald lime from 2,854-2,961 feet, total depth, and it is completed for 1,255 bbls. of oil on the pump.

Gypsy Oil Co. No. 1 Galliart, NE SW section 34-15-12w, in the recently



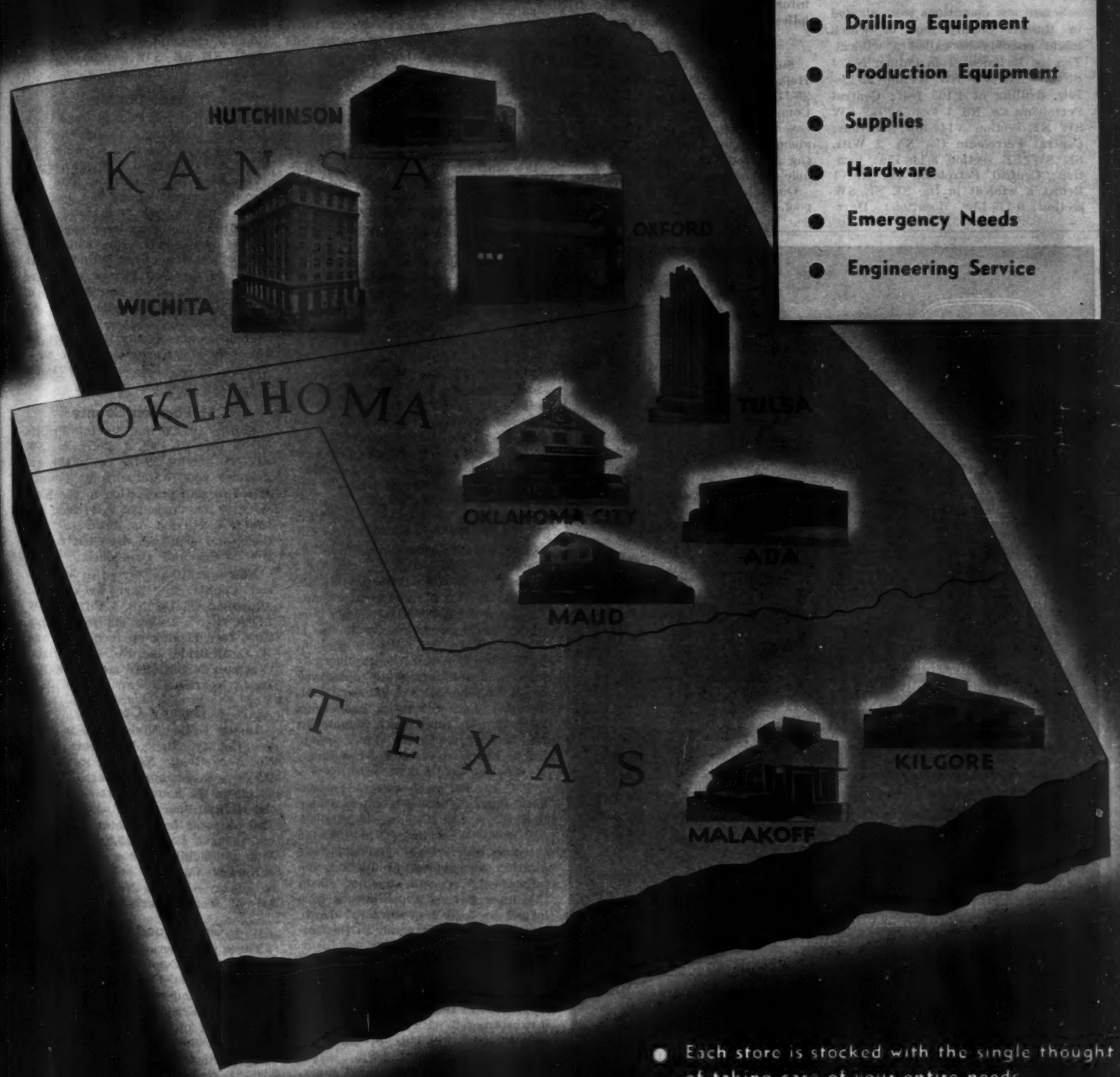
Lorraine pool in Ellsworth County. Texas Co. Nos. 6 and 7 Dees, in section 23-17-9w, have since come in successfully

(Original map by courtesy of Mid-Continent Map Co., Wichita)

LUCEY SUPPLY STORES

Are Conveniently Located

- Drilling Equipment
- Production Equipment
- Supplies
- Hardware
- Emergency Needs
- Engineering Service



- Each store is stocked with the single thought of taking care of your entire needs

PRODUCTS LUCEY CORPORATION

LUCEY PRODUCTS CORPORATION

OIL WELL SUPPLIES

TULSA, OKLAHOMA

opened Dubuque pool, drilled Siliceous lime at 3,298-3,336 feet, total depth, and the test plugged back to 3,331 feet due to water in the base. It was then acidized with 1,000 gallons and completed for 82 bbls. of oil and 236 bbls. of water on the pump. The north offset to the Gypsy well evidently missed Siliceous lime instead of encountering a sand at 3,355-84 feet, total depth, which yielded salt water and the test was abandoned. It is Phillips Petroleum Co. No. 1 Klusner, SE NW section 34-15s-12w.

Seven new operations were started in Russell County, one of which might possibly be called a wildcat. The list includes: Tom Palmer No. 4 Steinle, NE NW SW section 22-13s-14w, drilling at 1,165 feet; Central Petroleum Co. No. 1 Foster "B," SW SW NE section 3-14s-15w, location; Central Petroleum Co. No. 2 Witt, SE SW SE section 3-14s-15w, location; Central Petroleum Co. No. 1 Benso, a wildcat in the SE SE SW section 9-14s-15w, location; Hartman & Blair's No. 1 Harbaugh, NE NE SW section 25-14s-14w, building rig; Saco Oil Co. No. 2 Krug, NE NW NW section 26-14s-14w, cellar, and Darby Petroleum Co. No. 1 Steinert, SW cor. section 25-15s-15w, a location.

Rooks County

A new test is scheduled to start in Rooks County with the staking of a location in the SW SW NE section 31-10s-16w, by Pryor & Lockhart for their No. 1 Bradley. It is a wildcat venture being drilled on subsurface information and located about 3 miles southwest of the Kruse pool.

Ellsworth County

Smith & Ash and others No. 3 Heiken "A," NE NW NW section 25-17s-10w, Heiken pool, Ellsworth County, one location east of the discovery well in the pool, was dry and abandoned at 3,298 feet, 37 feet in the Siliceous lime, where it got a hole full of water.

One mile southwest of the Heiken pool, Slick-Urschel, Inc., Pryor & Lockhart and others No. 1 Sturn, NW SW section 26-17s-10w, found an oil showing at 3,278 feet, only to strike a hole full of water at 3,363 feet, total depth, and the test was abandoned.

In the Lorraine sector, Texas Co. No. 6 Dees, SW NE NW section 23-17s-9w, logged Siliceous lime from 3,170-86 feet, total depth, and shot that formation with 10 quarts and 20 quarts and acidized with 4,000 gallons to obtain a potential rating of 848 bbls. of oil with a slight amount of water for its completed gauge.

The same company's No. 7 Dees, NW SE NW section 23-17s-9w, has logged Siliceous lime from 3,184-97 feet, total depth, the test filling 1,100 feet with oil in three and one-half hours.

Phillips Petroleum Co. is waiting for cement to set after running the 7-inch casing to 3,196 feet, top of the Siliceous lime, in its No. 5 Melchert, SE SW NE section 23-17s-9w.

Barton County

There were no completions in Barton County but the following six new operations were started, three of which were wildcats. Derby Oil Co. No. 1 Heinz, SW NW NW section 28-18s-11w, cellar; Morgan & Flynn and others No. 1 Amerine, a wildcat in the NE cor. section 14-19s-14w, cellar; Morgan & Flynn and others No. 1 Zimmer, SE SE SW section 20-19s-14w, location staked and also a wildcat; Gypsy Oil Co. No. 4 L. A. Steckel, NW SE NE section 1-20-11w, location; Magnolia Petroleum Co. No. 3 Steckel, SE NW NE section 1-20-11w, cellar, and Buchanan and Alexander No. 1 Langfeld, NE NE SW section 14-20s-11w, cellar.

Rice County

Phillips Petroleum Co. and Indian Territory Illuminating Oil Co. No. 5 Krampe, SW SE SE section 31-19s-10w, in the Steckel pool in Rice County, has a rated potential of 179 bbls. of oil in 24 hours on the pump. It was completed in Siliceous lime at 3,288-3,320 feet, total depth. The pay had been acidized. Same operators' No. 6 Krampe, SE SW SE section 31-19s-10w, had Siliceous lime from 3,305-32 feet, total depth, which put 396 bbls. of oil in the tanks, pumping 24 hours for its completed gauge. It was not acidized.

The Steckel pool suffered a setback during the week when Stanolind Oil & Gas Co. No. 3 Mitchell, SW NW SW section 32-19s-10w, on the east side of the pool and one location away from production, obtained only a small show of oil in the upper part of the Siliceous lime logged at 3,340-47 feet, total depth, and indicating salt water in the bottom. It is abandoned.

Bradley Oil Co. No. 1 Mitchell, NW SW SW section 32-19s-10w, is completed in the Siliceous lime drilled from 3,305-24 feet ,total depth, where it was treated with 1,000 gallons of acid to yield 246 bbls. of oil in 24 hours on the pump.

In the Wenke pool in Rice County, Twin Drilling Co. No. 1 Burchart, SW cor. section 8-20s-10w, potentialed 38 bbls. of oil in 24 hours on the pump and is completed in Siliceous lime 3,335-58 feet, total depth.

Sinclair Prairie Oil & Gas Co. No. 2 Graham, SE SW SE section 16-20s-10w, Raymond pool, was good for 850 bbls. of oil on the pump for its completed gauge after acidizing Siliceous lime 3,343-49 feet, total depth, with 1,000 gallons.

In the Chase pool in Rice County, Gypsy Oil Co. deepened and recompleted its No. 3 Coffman, NW SW SW section 5-20s-9w, old total depth of 3,248 feet was carried on down to 3,283 feet in Siliceous lime and it pumped 683 bbls. of oil and 140 bbls. of water in 24 hours after a 1,000-gallon shot of acid.

Three new operations were reported in Rice County, one of which is a wildcat: Bradley Oil Co. No. 1 Wendell, NW SE NE section 32-19s-10w, a location; Skelly Oil Co. No. 1 Graham, SW SE SE section 16-20s-10w, a rig, and W. E. Witt No. 1 Hall, SE SE NW section 3-20s-9w, a wildcat, building rig.

Reno County

In the Burrton Pool in Reno County, Olson Drilling Co. and Shell Petroleum Corp. No. 3 E. Krehbiel "B," CEL W half W half NW quarter section 26-23s-4w, a Hunton lime failure on the west side of the pool, has been plugged back from total depth of 3,618 feet, and casing ripped from 3,235-65 feet, where the Chat formation was then acidized with 1,000 gallons and the well is now completed for 104 bbls. of oil and 30 bbls. of water in 24 hours with 12,000,000 feet of gas.

Reno County's only new start for the week was Texas Co. No. 1 A. F. Collins, C NE NE section 9-24s-4w, a location in the Stone pool.

McPherson County

Sunray Oil Co. and Sinclair Prairie Oil & Gas Co. No. 1 Peterson, SW SW NW section 29-18s-2w, in the Anderson pool, McPherson County, failed to find production in the Kansas City lime logged at 2,314 feet, and the test, carried on down to 2,985 feet, total depth, in the Chat formation is dry and abandoned.

New operations started in McPherson County the past week were: Marathon Oil Co. No. 1 Pitts, C SW SE section 2-19s-2w, old total depth 2,995 feet, rigging up to deepen, and W. C. McBride, Inc. No. 4 Whitright, C S half N half SW section 30-19s-1w, a location.

Harvey County

In the Hollow-Nikkel pool in Harvey County, Shell Petroleum Corp. No. 3 Neufeldt, NE NW section 8-22s-3w, was completed for 473 bbls. of oil in 24 hours on the pump in the Hunton lime topped at 3,488 feet. The test was bottomed at 3,530 feet but plugged back to 3,510 feet and shot and acidized.

Harvey County's only new start is Sunray Oil Co. No. 1 Dirks, C SE SW section 14-22s-2w, a location.

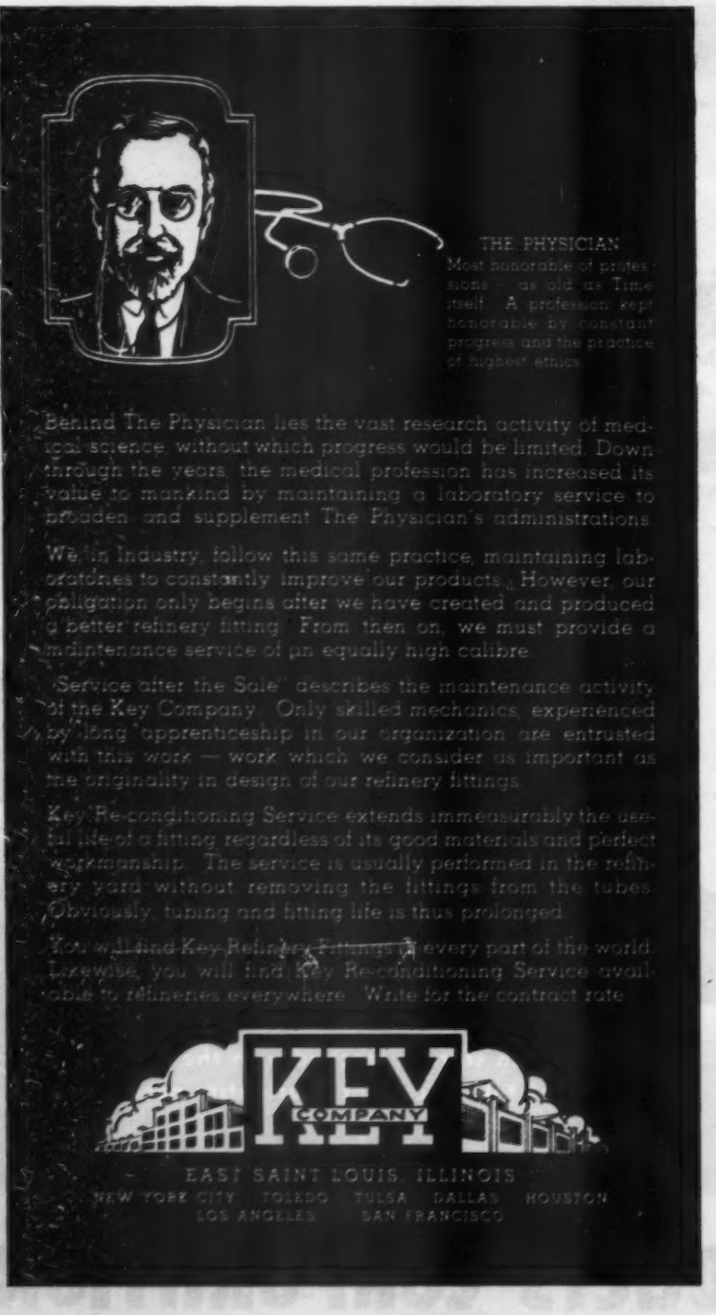
Greenwood County

Three new operations were started in Greenwood County during the past week and no completions. The new starts are: Anderson & McGinnis No. 1 Jensen, SE SE SW section 30-23s-12e, rigging up; Tide Water Oil Co. and Great Southern Oil Co. No. 12 Stephenson, C E half SE SW section 2-26s-8e, rigging up, and N. C. Dunn No. 1 Dawson, C NW NE section 27-26s-13e, a rig.

Sedgwick County

In the Greenwich pool in Sedgwick County, Shell Petroleum Corp. No. 1 Fischer, NE SE section 15-26s-2e, was deepened from 3,202 feet to the Wilcox sand 3,242-3,335 feet where an

(Continued on Page 83)


THE PHYSICIAN
Most honorable of professions — as old as Time itself. A profession kept honorable by constant progress and the practice of highest ethics.
Behind The Physician lies the vast research activity of medical science without which progress would be limited. Down through the years, the medical profession has increased its value to mankind by maintaining a laboratory service to broaden and supplement The Physician's administrations.
We in Industry, follow this same practice, maintaining laboratories to constantly improve our products. However, our obligation only begins after we have created and produced a better refinery fitting. From then on, we must provide a maintenance service of an equally high calibre.
"Service after the Sale" describes the maintenance activity of the Key Company. Only skilled mechanics, experienced by long apprenticeship in our organization are entrusted with this work — work which we consider as important as the originality in design of our refinery fittings.
Key Re-conditioning Service extends immeasurably the useful life of a fitting regardless of its good materials and perfect workmanship. The service is usually performed in the refinery yard without removing the fittings from the tubes. Obviously, tubing and fitting life is thus prolonged.
You will find Key Refinery Fittings in every part of the world. Likewise, you will find Key Re-conditioning Service available to refineries everywhere. Write for the contract rate.
KEY COMPANY
EAST SAINT LOUIS, ILLINOIS
NEW YORK CITY TOLEDO TULSA DALLAS HOUSTON
LOS ANGELES SAN FRANCISCO

Central West

Operations in Central Ohio, Kentucky, Illinois, Indiana

By GEORGE A. WHITNEY

FINDLAY, Ohio, Dec. 16. — Increased activity is being shown in the oil areas of the Lima and Central Ohio fields, although no large oil wells are reported. In the Lima field the wells were very small producers. In Putnam County, near Lima, Brown & Co. No. 1 on the Robert Baker farm, section 22, Blanchard township, produced 10 bbls. initial at 1,356 feet, and may be the making of a producing area. In Hancock County, in the Findlay field, the Wonder Oil Co. is reported at a depth of 1,540 feet, and is on the Holland and Harold farm, section 27, Biglick Township, and if it proves a commercial producer may pave a way for the renewal of further test work in the county.

In Henry County, there are two wells under way that may bring about areas that have always looked promising for production. Stoddard & Darke are drilling on the C. S. Shelly farm, section 7, Marion Township, and on the B. D. Snonby farm, section 6, same township.

In Wood County, Mary V. Concen is drilling a test on the C. E. Mercer farm, section 14, Liberty Township. In Perrysburg Township, Wilber P. Hoople is drilling No. 1 Mary Reitzer, and in Jackson Township Pember & Raydure are drilling No. 1 R. E. Wagner, section 27.

In Auglaize County, C. Wentzer is drilling No. 1 fee, section 28, Douchoquet Township.

In Hardin County, Robert Kirk & Co. No. 1 Leroy Wander, section 27, Big Lick Township, produced 5 bbls. at a depth of 1,302 feet. T. E. George & Co. are drilling on the B. L. Thompson farm, section 15, Goshen Township.

In Darke County there are three wells under way in Mississinawa Township. The ayre E. C. Downey No. 1, section 20, and the Cole Oil & Gas Co. No. 20, on the W. C. Disher farm, same section, and J. G. G. H. Huffman No. 4 J. A. Cox farm, section 16, same township.

In Ottawa County, Peninsula Oil Co. is drilling on the James Ellithorp farm, section 25, Catawba Township.

Small Completion

In Seneca County, M. E. Keaser No. 1 on the H. Russell farm, section 17, Jackson Township, produced 2 bbls. initially at 1,260 feet. In Crane Township, Harpster & Donnell are drilling No. 3 Nichols Webster, section 34, and H. E. Greene is drilling No. 3 T. C. and B. G. Schaull, section 30, same township.

In Sandusky County, Montgomery & Co. were drilling No. 2 N. T. Hetrick farm, section 17, Rice Township, and Homer E. Keiser drilling No. 17 Homer Russell, section 8, Jackson Township.

In Wyandot County, Strouse & Co. have rig up on the Fred Mozier farm, section 7, Crane Township. Dempsey & Co. were drilling No. 1 S. P. Hooper, section 22, same township. In Pitt Township Wood & Co. were drilling No. 1 Edward Orton, section 22, and Cessna & Feasel drilling No. 1 Thomas Bowman, section 15, same township.

Good Well in Holmes

In Holmes County, Ohio Fuel Gas Co. was drilling No. 1 Albert Burkey farm, on Lot 10, Richland Township. Arkansas Fuel Oil Co. No. 1 James Patterson, section 12, Monroe Township, produced an initial of 25 bbls. at 3,550 feet. Ohio Fuel Gas Co. is drilling No. 1 on the Nettie A. Martin farm, Lot 11, Mechanic Township, and Bell Brothers are drilling No. 1 G. & M. Findley, section 18, same township. Same company has a rig in for a test on the Philip Mizer farm, section 26, Paint Township.

In Lorain County, Ohio Fuel Gas Co. was drilling No. 1 A. S. Gibson, Lot 80, Columbia Township; Minor & Co., drilling No. 3 Mathias Myers, Lot 32, Ridgeville Township; Schneider & Wyles, drilling No. 1 Violette Terrell, Lot 7, same township. William Dempsey is drilling No. 1 on the George Fisher farm, Lot 10, Avon Township. Frank Meredith has a rig in for No. 1 Rice & Rosencrang, Lot 104, Russia Township.

In Cuyahoga County, C. A. McMillen is drilling No. 1 Fuhmeyer & Geisendorfer farm, section 24, Independence Township; William Dempsey has a location for a test on the J. and A. Palmer, section 13, Eaton Township. In Newburg Township, same county, the Ferro Enamel Co. is drilling No. 1 on its Lot 307 in Newburg Township.

New Gas Wells

In Tuscarawas County, the Capital Drilling Co. No. 6 on the Stewart Asher farm, Lot 6, Washington Township, was a gas well at 3,733 feet. Columbia Carbon Co. No. 1 on the Lawrence Scharr farm, Lot 1, Warwick Township, is a gas well at a depth of 5,070 feet. Status Development Co. is drilling a test on the John G. Geckler farm, Lot 3, Sandy Township. J. H. Harper is drilling No. 1 on the Oscar Kohler farm, Lot 29, Jefferson Township.

In Summitt County, the East Ohio Gas Co. No. 1 on the Rose Lamb farm, section 17, Greene Township, produced 1 bbl. initially. Same company is drilling No. 2 J. H. Wertz, section 31, same township, and is drilling No. 1 on the Adam Lauby farm, section 17, same township. City Natural Gas Works is drilling No. 1 on the Mertz & Moyer farm, section 14, Pleasants Township, and the same company has a rig up for No. 3 F. A. Ruff, section 31, Rush Creek Township.

In Richland County, J. B. Reed No. 2 on the Kenneth McConkie farm, section 14, Jefferson Township, is a gas well at 3,323 feet.

In Coshocton County, Lyons & Muhlbach No. 1 on the Della Fair & Co. farm, section 13, Monroe Township, was a dry hole at a depth of 3,304 feet. Ohio Gas Light & Coke Co. No. 2 on the Lloyd Holderbaum farm, section 10, Mill Creek Township, is a gas well at 871 feet.

In Delaware County, Chester Wise is drilling No. 1 on the Herman D. Vance farm, section 3, Orange Township.

In Gallia County, Ohio Fuel Gas Co. is drilling No. 1 S. R. Bing farm, section 22, Addison Township.

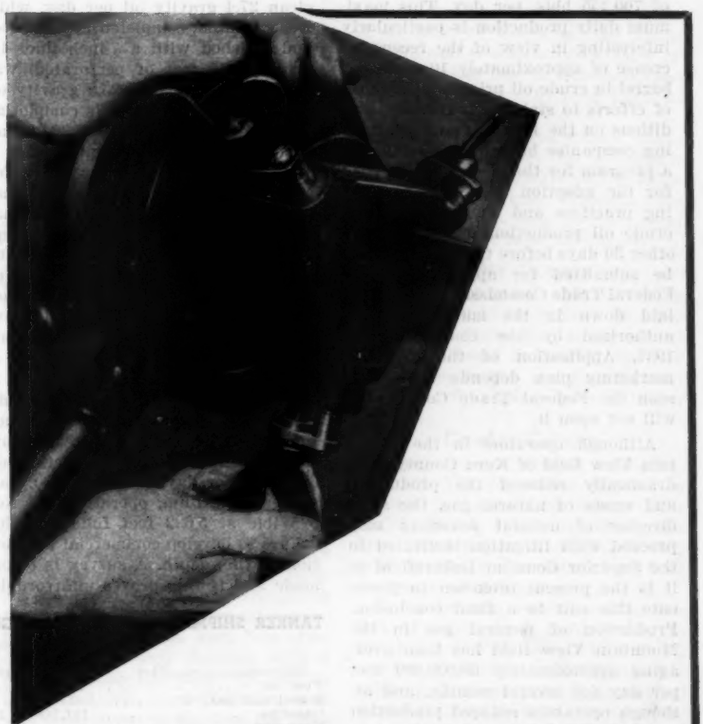
Perry County Activity

In Perry County, Mid-East Gas Co. drilled in a gas well on the F. B. Wilson farm, section 13, Reading Township, at a depth of 3,139 feet. Ohio Fuel Gas Co. drilled a dry hole in a test on the Hoster L. Fisher farm, section 36, Thorn Township. The Kissling Drilling Co. has a rig up for a test on the Lewis Stoltz farm, section 31, Reading Township. Hopewell Oil & Gas Co., drilling No. 5 Michael Emmert, section 9, same township; Westerman Brothers & Co., drilling No. 3 Harriett Gilmore, section 6, and Marshall Bauman & Co., drilling No. 1 A. J. Nautz, section 9, same township. Ohio Fuel Gas Co. has a rig up for a test on the F. L. Winsgardner farm, section 7, same township. Mid-East Gas Co. has a rig up for No. 2 Caywood, section 11, same township. Perry Sturm has a rig up for No. 2 E. L. Vanzickle, section 5, Reading Township.

In Wayne County, the Kenova Oil & Gas Co. is drilling No. 1 on the Elmer Cunningham farm, section 19, East Union Township. Ohio Fuel Gas has a location staked.

Runs made from wells served by the Illinois Pipe Line Co. in western Kentucky during the month of November, 1935, were 110,779.72 bbls.

In Hancock County, Bollinger and others No. 1 on the Paul Bailey farm was a dry hole.



"TOLEDO" SUPER-THREADERS—

—do not use bushings.

Clamped to the pipe by three chuck jaws operated by large wing-head set screws with graduated guide bars. Quick, easy, accurate centering. Long life pipe holder. Smooth, tapered threads that produce tight leak-proof joints.

When in need of 1" to 2" threaders, investigate "TOLEDO" Super-Threaders. Four models to choose from.

THE TOLEDO PIPE THREADING MACHINE CO.
TOLEDO, OHIO New York Office, 72 Lafayette Street

"TOLEDO" No. 1BR
1" TO 2" RATCHET

California Field Report

By
L. P. STOCKMAN

PRODUCTION TOPPED 700,000 BBLS. PER DAY IN CALIFORNIA

LOS ANGELES, Calif., Dec. 16.—Crude oil production in California for two days this week topped 700,000 bbls. per day for the first time since March 1, 1930, when state production totaled 702,411 bbls. and averaged 718,000 bbls. daily for the week ending March 2, 1930.

Production declined a few thousand barrels per day later in the week and consequently the average daily production for the past seven-day period was somewhat below the top figure of 700,155 bbls. per day. This maximum daily production is particularly interesting in view of the recent increase of approximately 10 cents per barrel in crude oil prices and because of efforts to stabilize marketing conditions on the Pacific Coast. Marketing companies have been working on a program for the past several weeks for the adoption of ethical marketing practices and the regulation of crude oil production. It may be another 30 days before this program can be submitted for approval by the Federal Trade Commission along lines laid down in the marketing code authorized by the commission in 1931. Application of the proposed marketing plan depends upon how soon the Federal Trade Commission will act upon it.

Although operators in the Mountain View field of Kern County have drastically reduced the production and waste of natural gas, the state director of natural resources may proceed with litigation instituted in the Superior Court at Bakersfield as it is the present intention to prosecute this suit to a final conclusion. Production of natural gas in the Mountain View field has been averaging approximately 60,000,000 feet per day for several months, and although operators reduced production to 45,000,000 feet per day, the completion of No. 2 Symons of the Hogan Petroleum Co. restored production to approximately 60,000,000 feet per day as this well, finished about 10 days ago flowing 25,000,000 feet of gas per day, is at the present time producing 13,000,000 feet of gas and 380 bbls. of clean 37.1 gravity oil per day.

Mountain View

Completion of the Hogan Petroleum Co. No. 2 Symons in the Mountain View field of Kern County tends to indicate that this company may have opened a new area for development, but despite the belief of some, this well is undoubtedly located on the Mountain View structure. Drilling operations of the Ohio Oil Co. on the Derby lease in section 33-30-29 and the outcome of the Hogan Petroleum Co. No. 2 Symons indicate that the Mountain View fault sheers off to the southeast and may continue to show commercial production for another mile or so. No. 2 Symons of the Hogan Petroleum Co. is located 330 feet south and 330 feet east of the northwest corner of section 4-31-29. The first well on this property was abandoned as a duster at 5,896 feet.

The Standard Oil Co. completed two wells in the Mountain View field. The company's No. 2 Mullaney, bottomed at 5,336 feet and finished with a 7-inch liner carrying 243 feet of perforated pipe, was brought in under a natural flow doing 648 bbls. of clean 27.4 gravity oil per day, while No. 7 Ranton, completed at 5,340 feet and finished with a 7-inch liner including 245 feet of perforated, was good for 185 bbls. of 25.8 gravity oil per day. The Standard is completing No. 2 Abadie in section 13-30-28 and should have No. 8 Ranton, No. 8 Wible and No. 2 Wilson ready for production soon. The Wood-Callahan Oil Co. recompleted No. 2 National and after being redrilled and deepened to 5,834 feet and finished with a 5-inch liner including 301 feet of perforated, it returned to production flowing 260 bbls. of clean 32.1 gravity oil and 12,000,000 feet of gas per day. The well was pinched back a few days later in order to secure a more favorable gas-oil ratio and this resulted in a reduction of gas production of 7,000,000 feet per day and an increase in crude oil production of 351 bbls. per day. Union Oil Co. has suspended drilling operations on No. 5 Wible at 5,622 feet following the failure to develop commercial production at this depth. A survey is being made and if this proves unfavorable the hole will probably be abandoned.

The state's suit, being prosecuted under the gas conservation law, will be heard in the Superior Court of Bakersfield beginning December 17, 1935, and unless a change is made in plans at the last minute this suit will be carried forward in order to secure a court decision.

Santa Fe Springs

The Wilshire Oil Co. is rigging up rotary drilling equipment in No. 4-A Baker in the Santa Fe Springs field of Los Angeles Basin preparatory to making a production test. It was drilled to 8,803 feet a few years ago and suspended at that point following the failure to result in deep production. This well has a string of 4¾-inch landed and cemented at 8,479 feet and it is the present intention to drill out cement and plug back if production is not obtained in the lower part of the hole. This well looked rather promising during the course of work, but an apparent faulty water shutoff prevented a satisfactory production test. No. 4-A Baker is bottomed in the Miocene and consequently the outcome of present work will be watched with considerable interest. Geological conditions are favorable for the development of deeper production in the Santa Fe Springs field, although it may be necessary to drill down to a depth of approximately 10,000 feet. The small diameter of the last water string landed and cemented in the Wilshire No. 4-A Baker precludes a satisfactory deep test unless this pipe is cut out and the lower portion sidetracked.

Los Angeles Basin

The Wilshire Oil Co.'s action in reentering No. 4-A Baker tends to indicate that operators in Los Angeles Basin fields are considering deeper drilling and the possibility of developing commercial production in lower zones. The basement complex has not yet been reached in any field located out in the central part of Los Angeles Basin and consequently these fields all have deep zone possibilities. This is particularly true of Santa Fe Springs, Huntington Beach, Seal Beach, Long Beach, Dominguez, Rosecrans and Inglewood. Fields located along the eastern rim of the basin, including Whittier, Puente, Brea Olinda and Richfield, may have deep zone possibilities but the prospects are less favorable than the possibilities in the fields mentioned above. Schist has been definitely logged in the Torrance and Playa Del Rey fields of Los Angeles Basin and for this reason they do not present deep zone possibilities. The showings found by the Pedro Petroleum Corp. in No. 5 Fulton has prompted the Standard Oil Co. to undertake the drilling of a new well on the Weisel property and rig construction has already been started for No. 20 on this lease, 490 feet south from the northeast corner of the lease and 75 feet west. It is a direct offset to No. 5 Fulton of the Pedro Petroleum Corp. The Texas Co. has recompleted No. 4 Wickman in the Santa Fe Springs field and returned it to production, pumping 162 bbls. of relatively clean 34.1 gravity oil per day after the hole had been plugged back from 4,777 feet to 4,716 feet.

Montebello

Drilling operations in the eastern extension of the Montebello field are progressing rather slowly because subsurface conditions are not clearly defined. Wilshire Oil Co., which suspended drilling on No. 1 Baldwin and No. 1 Pellissier a few weeks ago, contemplates abandoning the latter at 3,981 feet but is still drilling ahead in No. 1 Afheldt. The final status of No. 1 Baldwin, which has been suspended at 4,297 feet, has not been definitely determined. The Woodward Oil Co. should be in a position to make a production test on No. 2 Lapworth, located in the extreme eastern end of the extension, sometime within the next week or so as the company has only a few hundred feet of hole to make.

Production in the western end of the Montebello extension has been developed in the Pliocene, while that produced in the extreme eastern end of the extension is coming from rocks

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	December 1		November 24			
	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Intercoastal-domestic:						
Fuel oil	.....	.....	.....	.....	.....	11,805,207
Diesel and gas oil	.....	.....	.....	.....	639,257	1,428,264
Gasoline	151,794	21,685	232,728	33,390	6,940,060	7,684,206
Kerosene	.....	.....	.....	.....	830,445	1,175,639
Asphalt	.....	.....	.....	.....	.....	70,019
Other finished oil	.....	.....	.....	.....	.....	54,778
Foreign exports:						
Crude oil	285,522	40,789	81,721	11,674	11,965,517	7,692,088
Fuel oil	206,926	29,562	245,006	35,001	11,217,797	12,369,642
Diesel and gas oil	203,358	29,051	75,906	10,844	4,359,830	3,824,850
Gasoline	43,644	6,235	101,280	14,469	6,327,415	4,533,920
Kerosene	47,194	6,742	.....	.....	1,184,363	1,645,569
Other finished oil	.....	.....	.....	.....	.....	27,955
Other unfinished oil	.....	.....	20,177	2,882	120,024	230,745
Coastwise-domestic:						
Crude oil	134,003	19,143	187,076	26,725	6,465,084	7,428,376
Fuel oil	168,114	24,016	188,285	26,898	8,681,342	8,860,057
Diesel and gas oil	8,981	1,283	.....	.....	1,079,813	694,004
Gasoline	284,903	40,700	277,298	39,614	10,663,863	13,020,544
Kerosene	8,989	1,284	.....	.....	175,198	298,773

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Fuel oil	.....	.....	.....	.....	.....	110,650
Diesel and gas oil	.....	.....	.....	.....	158,152	675,775
Gasoline	.....	.....	.....	.....	.....	435,943
Kerosene	.....	.....	.....	.....	149,715	276,592
Asphalt	.....	.....	.....	.....	484,597	.....
Lubricants	.....	.....	.....	.....	60,320	52,112
Foreign exports:						
Crude oil	159,165	22,738	.....	.....	2,536,173	1,778,601
Fuel oil	16,214	2,316	12,243	1,749	3,112,349	2,064,747
Diesel and gas oil	.....	.....	.....	.....	915,307	1,174,982
Gasoline	204,903	29,272	.....	.....	3,768,092	2,723,741
Kerosene	3,143	449	.....	.....	638,344	1,044,769
Lubricants	9,983	1,426	.....	.....	183,490	167,740
Other finished oil	.....	.....	.....	.....	.....	2,760
Other unfinished oil	.....	.....	.....	.....	.....	5,750
Coastwise-domestic:						
Fuel oil	489,664	69,952	64,767	9,244	6,724,356	4,945,668
Diesel and gas oil	.....	.....	.....	.....	215,294	119,036
Gasoline	170,909	24,287	73,989	10,570	4,143,378	5,308,889
Kerosene	.....	.....	5,892	842	94,005	82,434

of Miocene age. Pliocene production, paradoxical as it may seem, is secured at 5,800 feet while Miocene production is secured from a depth approximating 3,100 feet. This apparent unconformity is believed to be due to an overlap of Miocene formation in the eastern end of the extension and as a result Miocene production is being developed in the same field at a depth above that of the Pliocene.

No deep tests have been drilled through the Miocene in the eastern end of the extension, and as a result existing subsurface conditions in the Woodward area are still more or less conjectural. There is a very definite break between Pliocene production in the western end of the Montebello extension and Miocene production in the extreme eastern part. The area appears to be extremely broken up due either to local faulting or block faulting on a major scale. All production developed in the Pliocene up to the present is limited to a relatively small area in the western end of the eastern extension of the Montebello field. The Universal Consolidated, which recently recemented No. 1 Estrada at 5,548 feet, is making preparations to bring this well in barefoot in order to determine its potentiality before deepening it to the Cruz zone. This well was brought in a few weeks ago but failed to hold up and consequently the company is desirous of ascertaining production possibilities at the present depth before drilling ahead.

Torrance

Although voters at Redondo Beach overwhelmingly defeated a proposal to lift drilling restrictions in the Salt Lake tract in the extreme western end of the Torrance field, interest in this area continued unabated due to encouraging showings found in a well being drilled by Thomas R. Clark in section 6-4-14. Showings indicate the possibility of developing light oil production above the present depth, 3,522 feet, but considerable difference of opinion exists as to the relationship of this well to the Torrance field. It is located definitely within projected productive contours of the Torrance field unless there is a cross fault between this well and present production. Vern Dumas, president and general manager of the Imperial Pacific Oil Co., recently leased 33 acres north of the well being drilled by Thomas R. Clark and an early spud is anticipated. The extreme western end of the Torrance field has never been developed due to drilling restrictions imposed by the city of Redondo. Production contours indicate that the productive limits of the Redondo field extend westward out into the ocean, and that production could be developed within the corporate limits of Redondo Beach and out beyond the tide line. Legislative action precludes tideland development and drilling restrictions at Redondo Beach prevent further development of the Torrance field to the west.

Kettleman Hills

The Union Oil Co. has landed and cemented 10,813 feet of 6⅝-inch casing in No. 1 Lillis-Welsh, an outpost in the extreme western end of the Kettleman North Dome field, and drilling operations are expected to be resumed late next week.

Huntington Beach

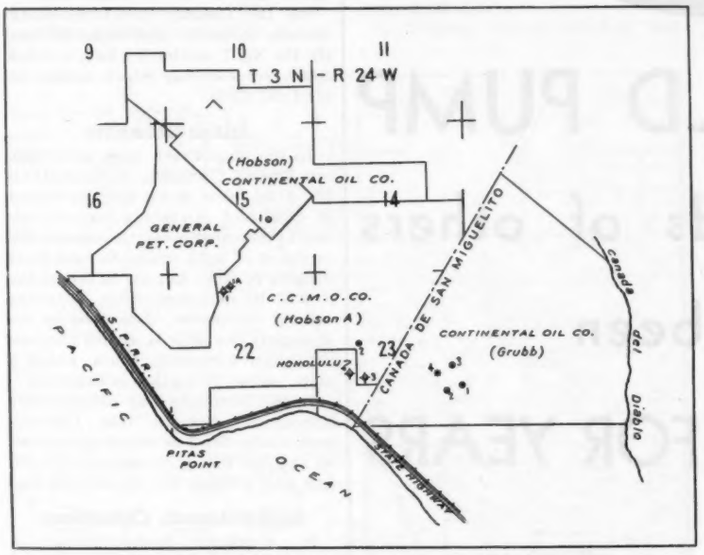
Although operators in the Huntington Beach field of Los Angeles Basin have made their peace with the state of California as far as exploitation of state tidelands through the medium of directional drilling is concerned, litigation involving this work is far from ended. A state senatorial committee held sessions a few months ago endeavoring to determine the advisability of permitting tideland development by the construction of drilling piers or isolated islands, but this matter will be presented to the next legislature for consideration. The Standard Oil Co. has filed an injunction suit in the Superior Court of Santa Ana petitioning the court to survey seven wells and order abandonment if found to have drifted across property owned, controlled or leased by the Standard Oil Co. and its subsidiary, the Huntington Beach Co. Although only seven wells are named in the suit, practically every operator producing from beneath state tidelands is involved. The suit filed early this week is directed specifically against the Wilshire Oil Co., Southern California Drilling Co., Bestmi Petroleum Corp. and the Petrol Corp. Drilling operations have shown an increasing tendency in the Huntington Beach field for the past two months and at the present rate this district should become relatively active in the near future. All wells under way in this field are being carried to existing productive zones and consequently their future initial daily production should be rather small.

Two wells were put on production in the Long Beach field this week although one of them was a recompletion. This was the Bernal Oil Co. No. 4 Signal, which was returned to production pumping 190 bbls. of 27.2 gravity oil cutting 8 per cent per day from 5,280 feet after the hole had been plugged back from 5,833 feet. The Abrams & Daly Oil Co. No. 1 Long Beach, a new well, was brought in pumping 216 bbls. of clean 30.4 gravity oil per day upon completion at 5,370 feet after the hole had been finished with a 5¾-inch liner carrying 101 feet of perforated. Abrams & Daly Oil Co.'s new well is located on the Lightburn lease and is its first successful well since completion of the agreement with the Sunnyside Cemetery whereby several wells will be permitted to be finished under the cemetery. This well was bottomed under the cemetery property by the use of directional drilling and reached the pay at exactly the predetermined spot. The well is located at Lemon and Willow Streets and since it was completed in the lower Brown zone the company will be able at a later date to perforate the casing and produce from the upper Brown zone.

Edison

J. H. Bauer completed No. 1 Edison in section 21-30-29 in the Edison field of Kern County by plugging back the hole from 4,554 feet to 3,195 feet from which depth it was brought in pumping 153 bbls. of relatively clean 19.3 gravity oil per day. Drilling operations in the Edison field have been holding rather steady as operators have adopted the practice of spudding in a new well immediately upon completion of work on drilling projects. The A. T. Jergins Trust and the Shell Oil Co. should both complete a new well in this field during the forthcoming week. In the Fruitvale field the Western Gulf Oil Co. completed No. 5 Price & Stewart and this new well was brought in flowing 130 bbls. of clean 22.3 gravity oil per day from 3,868 feet after the hole had been finished with a 6⅝-inch liner including 148 feet of perforated. The crew from this well was transferred to No. 6 on the same lease and an early spud is expected to be made. Out on the West Front of the Kern River Field of Kern County, The Texas Co. has completed No. 17 Lehman in section 23-28-27, and this new well was brought in pumping 244 bbls. of 15.7 gravity oil per day. This is the first well completed by The Texas Co. on this lease in several years, but another, No. 16 Lehman, should be ready for a production test within another fortnight. In the Premier section, the Grace-Kern Oil Co. has spudded in No. 1 Agey in section 26-27-27 and C. H. Kreighs is making preparations to complete his test in section 4-28-27. Associated Oil Co. No. 2 Premier in section 4-28-27 was returned to production during the early part of the week after the hole had been cleaned out to bottom, 2,383 feet. It was returned to production pumping 61 bbls. of 15.1 gravity oil per day but the output is still showing a rather high cut. In the Midway-Sunset field the General Petroleum Corp. has completed No. 243 Moco in section 35-12-24 and this new well was brought in pumping 96 bbls. of 14.7 gravity oil per day from 1,940 feet after the hole had been plugged back from 2,215 feet.

The Shell Oil Co. has abandoned No. 1 Buena Vista Associates in the Buena Vista gas field of Kern County and the Ohio Oil Co. is rigging up its fourth test on the Kern County Land Co. property in section 32-31-26. The Ohio has completed one gas well in this field but the next two wells proved to be dusters. The Shell's test just abandoned was located in section 9-32-25 several miles removed from the gas well finished by the Ohio several months ago. Superior Oil Co. has passed the 8,000-foot level in No. 2-A in the Semi-Tropic gas field of Kern County but is still drilling ahead. This deep test is being drilled in order to determine the possibility of developing commercial oil production below the existing productive dry gas zones.



San Miguel field, Ventura County, California

Kansas Fields

(Continued from Page 80)

8-quart shot brought forth 175 bbls. of oil first 24 hours on the pump and the well is completed. A show of water at 3,339 feet in Siliceous lime caused the owners to plug back to the Wilcox sand.

Dickey Oil Co. and others abandoned their wildcat, No. 1 Wilbur, SW cor. section 15-27s-1w, 6 miles due west of Wichita. Siliceous lime encountered from 3,611-20 feet, total depth, filled the hole with water.

Butler County

Pryor & Lockhart are moving in material to drill their No. 1 Boucher which will have the semblance of a wildcat, being located in the NW cor. section 19-27-4, about a mile west of the North Augusta pool in Butler County.

Cowley County

Baden, Johnson, Roth & Faurot No. 2 David, NW SE section 35-30s-4, in the new pool opened by them in their No. 1 David, the west offset, has been completed in sand 2,942-65 feet, total depth, for 158 bbls. of oil first 24 hours on the pump.

T. C. Johnson encountered a hole full of water from 3,050-60 feet in his No. 1-A Ferguson, NW SW SE section 17-30s-8, a wildcat venture midway between the Hannah and Grand Summit pools in Cowley County, and the test is abandoned at 3,196 feet, total depth.

A location was staked by Earl Wakefield in the NW NW SE section 2-31s-4e, for his No. 1 David, a new start for the week. Another Cowley County operation started during the week is Shawver and Witt's No. 1 Baruth, SW NW NE section 8-34s-3, a wildcat, rigging up.

Sumner County

Although there were no completions in Sumner County there were several operations under way, especially in the Oxford City pool which has two locations, and 12 active drilling wells. Shell Petroleum Corp. is drilling at 2,671 feet in its No. 1 Nevitt, NE SW NE section 14-32s-2e, a former producer in the shallower horizons with the Simpson dolomite formation being its present objective.

Woodson County

Woodson County's only completion is Harper Oil Co. No. 6 Rigge, NE

THIS FIELD PUMP

and thousands of others

have been

OPERATING FOR YEARS

on

PURCHASED

ELECTRIC POWER

•

Ask Your Power Company

PETROLEUM ELECTRIC POWER CLUB

SW section 28-23s-14, Headley-Schaffer pool, which logged the Mississippi lime from 1,639-70 feet, total depth, and good for 25 bbls. daily on the pump after acid treatment of 1,000 gallons.

The new work started in Woodson County is: Charles Sheedy and others No. 2 Klick, C E half E half SW section 20-25s-14, location; Sheedy and others No. 2 Nordmyer, C S half SE NW section 19-25s-14, drilling 450 feet, and Saco Oil Co. No. 1 Bradley, SW SW NW section 20-25s-14, a rig.

Canadian Fields

(Continued from Page 46)

which got good shows of gas and oil in the top of the lime and had a small pumping production. Pacalta Oils, Ltd., of Calgary has bought for cash LSD's 9 and 10, section 20-1-21w4, close to the Terminal well.

On the Comrey structure, southeastern Alberta, McDougall-McLeod Oil Co. No. 1, section 9-1-5w4, is below 2,650 feet carrying 8-inch casing behind the tools.

British Columbia

In the Sage Creek area, southeastern British Columbia, Columbia Oils No. 1 has shut down for the winter at 4,836 feet. Swabbing tests at this depth indicated a small commercial producer of light crude, the gas flare burning to 20 to 30 feet. In the spring it will be deepened, after installing heavier equipment. According to the geologists the drill is almost through the Altyn formation, below which a more porous formation is expected.

In the Boundary Bay district near Vancouver, Natural Gas Development Corp. No. 1 is standing cemented at 1,740 feet with bottom at 1,810 feet and waiting for 8⅝-inch casing.

Saskatchewan Operations

In northern Saskatchewan, a Prince Albert syndicate drilling about 30 miles south of the city has struck a fair gas flow at 200 feet and is deepening for commercial production. Location is a short distance east of the third meridian in an area previously untested. If commercial production is developed, the gas will be piped to Prince Albert.

In western Saskatchewan, Vera Oilfields No. 1 in the Unity Valley area is down 1,600 feet and waiting for casing. The company is headed by R. H. Breckon, formerly of Calgary, who was a partner in the Breckon & Hatch discovery well in Montana. The head office is at Saskatoon. Mr. Breckon headed the Unity Valley Oil & Gas Co. which some years ago drilled two deep tests in this area, one to 2,056 and another to 3,195 feet, encountering some oil and gas shows. The Unity Valley company holds an interest in some 7,000 acres of the Vera Oilfields holdings. The logs of the earlier wells indicate that Vera No. 1 should get the Dakota formation around 1,780 feet and the Devonian lime at 2,120 feet.

Drilling in Ontario

In the Eden fields, Elgin County, Ontario, Central Pipe Line Co. No. 2, Williams farm, Bayham Township, is finishing around 1,350 feet with a natural flow of about 250,000 feet a day of sweet gas from the Clinton sand. The sand is about 28 feet thick. It will be shot. C. A. Simpson and associates No. 4, Bayham Township, is around 1,300 feet. Olga Oil & Gas Co. No. 1, Claude A. Wilson farm, Bayham Township, 1 mile south and east of Eden, is spudding. Stover & Rawlings of Chatham have the contract for five wells for the Olga company in this area. A. McKechnie of Dunnville, drilling contractor, is moving in an outfit to drill a test for a Toronto syndicate.

In Dereham Township, Oxford County, Harry Evans drilling Hockley Valley Oil Co. No. 1, Ed Williams farm, Lot 11, Concession 7, is in the Arkosa formation at 5,660 feet and deepening. It is the deepest test ever drilled in Ontario. No. 2 for the Julian interests of Toronto on the Armand Smith farm, Lot 23, Concession 12, got a flow of 122,000 feet of sulfur gas around 900 feet depth. W. J. Hussey has No. 1 test rigged for Francis Daymond and associates a quarter mile north of the discovery well and about a mile south of Brownsville.

In the Dover field, Kent County, E. P. Rowe No. 1, Duphette farm, W half Lot 2, Concession 4, Dover East Township, is reported pumping 30 to 35 bbls. a day. E. P. Rowe No. 1 Bruette farm, Lot 5, Front Concession, Raleigh Township, is being put on the pump, utilizing electric power. E. P. Rowe No. 2 Bruette, 600 feet south, is spudding. In the west end of the field, Central Pipe Line Co. No. 4, Eli Jubenville farm, Lot 2, Front Concession, Dover West Township, is spudding. East of the field, Massey Oil & Gas Co. No. 1 Wm. Cook farm, Lot 12, Front Concession, Dover East Township, is below 3,100 feet and getting close to the break in the Trenton limestone.

In the DeClute field, Raleigh Township, Kent County, Union Gas Co.'s No. 31, Lot 140, Talbot Road, is below 500 feet. Farther north and east, Ladd & Knight No. 3, Lot 24, Concession 11, near Charing Cross, is below 1,200 feet. In Chatham Township, Kent County, Union Gas Co. No. 2, Lot 5, Concession 13, is below 600 feet.

In Lambton County, Simon & Kessler of Detroit have leased 2,000 acres, largely in Dawn Township, and have engaged George Gregory & Son to drill a series of deep tests. No. 1, at Dawn Valley near Edy's Mills, is below 300 feet. Simon & Kessler have also purchased the Robertson oil farm at Oil Springs with 16 shallow wells and the Dewhurst property in the Petrolia field with 25 wells, which they will recondition and put into operation.

Del Bonita Testing

On the Del Bonita structure in southern Alberta, Terminal Oil Co. No. 1, H. Orcutt location, NE section 18-1-21w4, has installed separator equipment and is testing production from the top of the Madison limestone. According to an official statement it got the top of the porous lime at 5,027 feet and bottoms at 5,073 feet. The Ellis shale from 4,987 feet to the contact yielded shows of naphtha and when the lime was hit the well blew in with 500,000 feet of wet gas. The next 15 feet yielded some free naphtha and in the last 15 feet of drilling some 38.5 Baume crude was bailed. After a preliminary production test the well will be treated with acid before deepening. Analysis of the Del Bonita crude made at Vancouver shows 36 per cent gasoline and 25 per cent kerosene with good lubricant properties and a paraffin base.

North Louisiana, Arkansas

FOUR NEW WELLS IN RODESSA BUT THE FIELD NOT EXTENDED

By
J. R. CRUMPTON

SHREVEPORT, La., Dec. 16.—The Rodessa field of Caddo Parish kept pace with its previous performances and turned in four big wells during the past week. The wildcat structures in other parts of the North Louisiana district continue to get a big play in leasing with major companies taking the lead. Mineral rights on these blocks are also in great demand in spite of the fact that there are no direct drilling obligations on many of the blocks. The acreage is being assembled on straight commercial leases to be worked out further by geophysical crews.

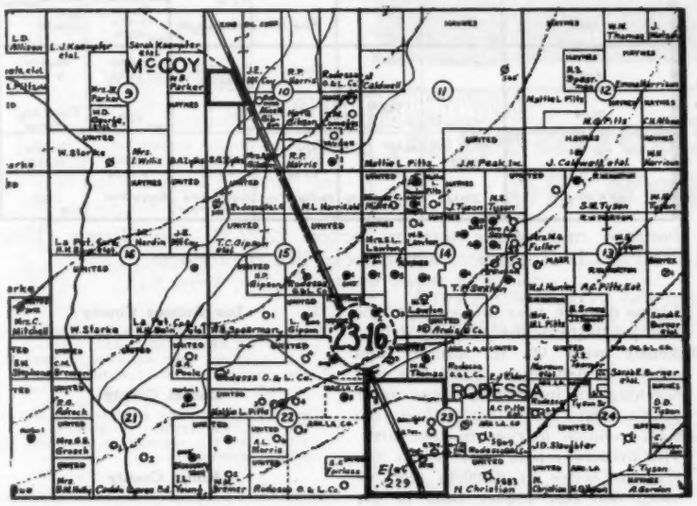
McAlester Fuel Oil Co. No. 1 Tyson, 250 feet north and 150 feet west of C section 22-23-16, in the vicinity of the discovery well, was completed flowing 195 bbls. per hour through three-quarters inch choke on casing from a total depth of 6,026 feet, subsea depth of 5,795.4 feet. Top of saturated lime was logged at 5,968 feet and working pressure on casing was 650 pounds.

R. W. Norton No. 2-A Caddo Levee Board, 1,320 feet south and 660 feet east of C section 21-23-16, flowed 66 bbls. per hour through one-half inch choke on tubing from total depth of 5,990 feet, subsea depth of 5,780 feet. Top of saturated lime was logged at 5,978 feet. In the northern part of the field, Pelican Oil & Gas Co. No. 3 Sexton, 330 feet south and east of NW cor. SE NE section 14-23-16, is flowing 97 bbls. per hour through one-half inch choke on tubing from 6,010 feet with the top of saturation contacted at 5,960 feet. Tubing pressure registered 975 pounds and casing pressure 800 pounds.

Haynes Production Co. No. 4 Sexton, 337 feet north and 230 feet west of SE cor. SW NE section 14-23-16, logged base of massive anhydrites at 5,563 feet, top of Gloyd sand at 5,824 feet, top of Deas sand at 5,977 feet and top of saturated lime at 5,990 feet. Seven-inch casing was set at 5,992 feet and the hole bottomed at 6,030 feet. It flowed 174 bbls. per hour through 1½-inch choke on tubing with 350 pounds casing pressure.

Not Extension Wells

None of the above completions extended present producing lines. George Manahan No. 1 T. M. Comegys, section 10-23-16, farthest outpost test to the north, bailed salt water but had a show of oil after pulling tubing. The hole has been plugged back to 5,905 feet and casing perforated in several places. Operators hope to make a well in the Hill sand, first gas producing horizon on the updip toward the fault line. Lion Oil Refining Co. No. 1 J. M. Wynn, section 9-23-15, about 3 miles northeast of production, set 10¾-inch casing at 2,121 feet. About midway between this test and the northern part of the field, M. H. Marr and others No. 1 W. J. Hunter, section 13-23-16, topped anhydrites at 5,043 feet and is drilling at 5,600 feet. Five miles southwest of the field in Cass County, East Texas, American Liberty Oil Co. No. 1 J. B. Rodgers, C. M. Robinson Survey, is coring at 5,793 feet. Complete drilling information is not available on this test, but it is reported to have topped anhydrites at 5,144 feet.



The heart of the Rodessa field in northwestern Caddo Parish, Louisiana, with development work up to December 10

(Courtesy of Texarkana Map & Blue Print Co., Texarkana, U.S.A.)

There are 32 active drilling operations in the Rodessa field and numerous locations have been staked during the past week. United Gas Public Service Co. has 14 active rigs and Haynes Production Co. and Pelican Oil & Gasoline Co. follow in number of operations, practically all of them grouped in a small area.

Ouachita Parish

American Liberty Oil Co. No. 1 Golson, section 25-17-1e, Ouachita Parish, was finally abandoned as a salt water hole at 5,124 feet. The old total depth was 5,381 feet and the hole had been plugged back and perforated at various depths. In De-Soto Parish, Ed Saffold and others No. 1 Thigpen, section 33-13-13, an old well drilling deeper from 1,730 feet, was dry and abandoned in lime at 3,303 feet. The Converse area of Sabine Parish, reported two small producers. H. H. Morris, trustee No. 2 Henderson, section 29-9-13, is a 30-bbl. pumper from 1,710 feet, and Lee Whitehurst No. 1 Allen, section 19-9-13, is making 120 bbls. daily from 1,657 feet.

In the Monroe Field

In the Monroe field, Morehouse Parish, United Gas Public Service Co. No. 31 Crossett, section 15-21-4e, gauged 7,534,000 feet of gas with 910 pounds rock pressure from 2,174 feet. In the Union Parish area of the same field, Nemours Corp. No. 2 McGlouth, section 23-22-3e, is flowing 1,774,000 feet of gas on 1,015 pounds pressure from 2,198 feet.

A Webster Parish shallow test, Bennett & Eldred No. 1 Fullbright, section 1-18-19, was dry and abandoned at 3,018 feet. The test, located about 3 miles west of the town of Minden, did not put any contacts but it is supposed to have been below the Blossom horizon.

None of the other wildcats was on test during the past week, but a number are rapidly reaching the testing stage. In the Sligo field, Bossier Parish, Arkansas-Louisiana Gas Co. No. 1-B Werner, section 7-17-11, topped anhydrites at 3,541 feet and logged the base at 4,002 feet. Seven-inch casing has been set at 4,072 feet. Producers Oil & Gas Co. No. 1 Pettitt, section 17-17-11, set 10-inch at 3,987 feet with the total depth at 4,231 feet. In the same field, Triangle Drilling Co. is still fishing for drill stem at 2,714 feet on its No. 3 Skannall unit, well No. 1, in section 13-17-12. Other North Louisiana wildcats follow: Caldwell Parish, Critchett & Woods No. 1 Kyles, section 18-11-3e, set 10-inch at 100 feet on new hole and drilling at 610 feet. Claiborne Parish, J. H. Lester No. 1 Robinson, section 16-21-6, set 10-inch surface at 160 feet; United Gas Public Service Co. No. 2 Durrett, section 31-20-5, Sugar Creek field, topped anhydrites at 3,923 feet and drilling in that formation at 4,237 feet. Webster Parish, J. L. Edwards, trustee, No. 1 Hooper, section 8-17-9, set 12½-inch at 170 feet; Lyons & Meyers No. 1 Brantley, section 1-21-9, set 10-inch at 70 feet and drilling at 210 feet.

ARKANSAS

Joe Modisett's deep test in Lafayette County, No. 1 Red River Lumber Co., section 21-19-24, continues to have a fishing job for 1,200 feet of drill stem with the hole bottomed at 5,316 feet. Riggs Brothers No. 1 J. W. DuBose, section 35-15-24, has set 6-inch casing at 2,836 feet, drilled plug and are arranging to test. Transportation Petroleum Co. No. 1 Cockran, section 26-19-25, swabbed dry at 3,362 feet and is coring ahead at 3,366 feet.

About 3 miles north of the Rodessa field, Haynes Oil Corp. No. 1 Embree estate, section 9-20-28, is drilling at 4,340 feet. No information is available on the contacts in this wildcat. King Oil Corp. No. 1 G. W. Crank, section 19-16-25, southeast of the Miller County field, was dry on drill stem test from 3,530-35 feet and is coring at 3,560 feet. In Nevada County, Sneed & O'Mara have taken over Carnette and others No. 1 Floyd Munn, section 16-14-22, set 12½-inch at 42 feet and drilling at 400 feet. J. R. Lockhard and others No. 1 Abramson, section 19-1s-1w, Mondoe County, is arranging to resume drilling from 3,400 feet. A deep test in Ouachita County, Benedum & Trees No. 1 Brighton, section 29-14-19, is coring hard gray sand at 5,005 feet. A new test is reported from Pulaski County, Base Line Oil Co. No. 1 Wilson, section 28-1s-11w, has spudded in and set 8-inch casing at 123 feet.

Estimated Production

Estimated daily gross production of all companies for the week ending December 14 follows:

NORTH LOUISIANA

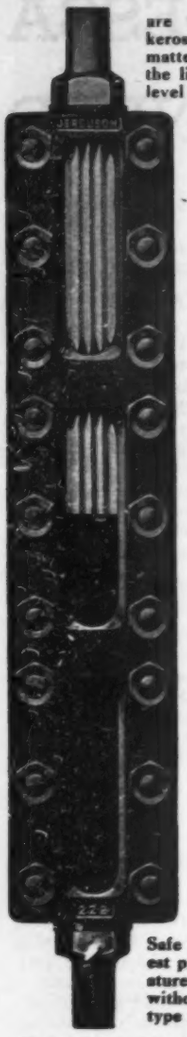
Bellevue	500
Caddo light	4,205
Caddo heavy	2,290
Converse	1,325
Cotton Valley	340
De Soto and Red River	1,355
Elm Grove	420
Haynesville	3,375
Holly	150
Homer	2,585
Pleasant Hill	170
Rodessa	16,865
Sarepta-Carterville	500
Urania	2,695
Zwolle	1,380
Total	38,155

SOUTH ARKANSAS

Champagnolle	1,900
El Dorado	2,210
Lisbon	300
Miller County	1,355
Nevada	865
Smackover light	2,200
Smackover heavy	17,850
Stephens	625
Urbana	2,175
Total	29,480

JERGUSON

REFLEX GAGES



are ideal for gasoline, kerosene, steam, oil. No matter what the color of the liquid, they show the level in BLACK.

The *empty* space appears WHITE

The *Liquid* shows BLACK

Safe and durable at highest pressures and temperatures. Furnished with or without valves for every type of service. Write us.

Jerguson Gage & Valve Co.
Mystic Ave. and Northern Artery
SOMERVILLE, MASS.

This Lantern Can "TAKE IT"

When you carry an Ecolite you're sure of ample light. It is built to endure hard use and give unfailing service.

Their simple, sturdy construction gives Ecolite Lanterns long life. There is nothing to get out of order.

AVAILABLE AT SUPPLY STORES

ECOLITE
IT PIVOTS—TILTS—FOCUSES
ECONOMY ELECTRIC LANTERN CO.
325 W. Huron St. CHICAGO, ILL.

Rocky Mountain Area

(Continued from Page 48)

Torrance County

48 Pet. Co. No. 1 Greenfield, C NW SW sec. 17-9-8e.
Drlg. below 1,100 ft.

Bruce Fraler No. 1 Graler, SE sec. 12-2n-3l.
Drlg. 1,210 ft. in granite wash water at 882-86 ft.

COLORADO

Elbert County

The C. E. Lambert wildcat in the Limon district, near the center of the Denver Basin, which is being drilled jointly with W. R. Ramsey and others, is drilling at 3,768 feet and reaching an interesting stage as it draws near the Timpas lime, the most reliable marker in that area. The drillers report that it cut the Hygiene series at 2,900-45 feet, or about 300 feet higher than in the Botts well 9 miles to the west. At 2,880 feet it ran into a sticky rubbery substance, followed by streaks of lime, which also were encountered in the Botts test.

C. E. Lambert No. 1 Union Pacific, C sec. 13-8s-57w.
Drlg. 3,768 ft.

Archuleta County

Wm. E. Hughes Est. No. 4 fee (unsurveyed), 400 ft. E of No. 2 fee, sec. 24-33n-2e.
Rigging.

Oil City Pet. Co. No. 1-A Garnett, NW NE NW sec. 25-33n-2e.
S.D. 1,515 ft.; top Dakota series at 1,415 ft.

Oil City Pet. Co. and Archuleta O. & G. Co. No. 1 Rath, 220 ft. N of S line, 220 ft. W of E line, Lot 4, sec. 24-33n-2e.
Moving in rig.

E. L. Kendrick No. 1 Crowley (unsurveyed), sec. 2-32-1e.
Moving in material.

Boulder County

Leslie R. Steele et al No. 1 Maxwell, SW NE NW sec. 24-1n-71.
Set 4½-in. on bottom at 2,412 ft.

Jackson County

The Continental Oil Co. No. 3 Hoye, South McCallum dome, is still testing production in the second Dakota sand, where it is having trouble producing the oil on account of the carbon dioxide gas. Tests run from 25 to 35 bbls. of oil a day with a large flow of the gas. Two highly saturated sands in the Dakota undoubtedly would be good producers if the trouble with the gas could be overcome. Experimental work is continuing in an effort to solve the problem.

Colorado Oil Ref. Co. No. 1 North Park Coal, NW NW sec. 18-9n-78.
T.D. 1,805 ft.; underreaming 12½-in. to bottom.

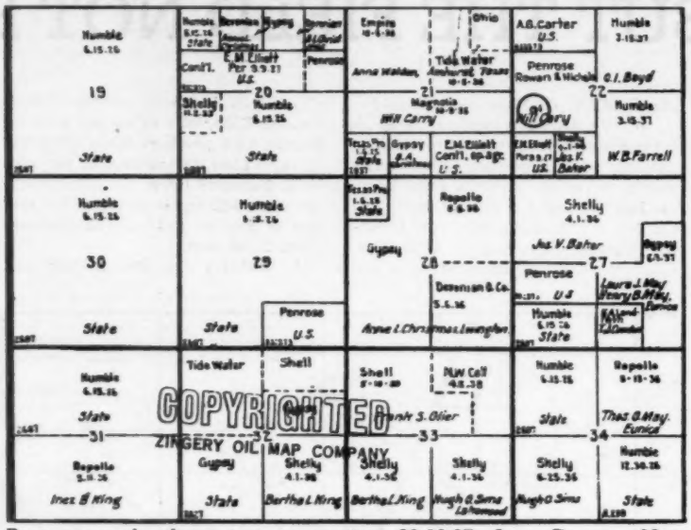
Continental Oil Co. No. 3 Hoyle, NW NW NE sec. 34-9n-78.
T.D. 5,258 ft.; top Morrison at 5,183 ft.; cemented back and drilled out cement to 5,062 ft.; perforated casing at 5,020-38 ft. and testing.

Jefferson County

Ruby Hill O. & G. Co. No. 1 Braden, SE cor. sec. 24-4n-69.
Drlg. 4,320 ft.; running 3 shifts.

La Plata County

McGarr Pet. Co. No. 1 Pinion Mesa, CSL NE NE sec. 34-33n-12w.
Drlg. 1,000 ft.



Penrose and others test in section 22-22-37, Lea County, New Mexico, which looks like a producer

(Courtesy of Zingery Oil Map Co., Fort Worth, Tex.)

COPYRIGHTED
ZINGERY OIL MAP COMPANY

Las Animas County

Mountain States Oil Corp. No. 1 Nickola, C NE NE SE sec. 10-34-62.
T.D. 1,740 ft.; used aqua-jel at 1,640 ft. and cleaning out and fishing for tools.

Lincoln County

Consolidated Smelting & Metals Co. No. 1 Hancock, NE NE sec. 7-17s-52.
T.D. 1,780 ft.; moving in material to rebuild derrick.

Moffat County

Texas Co. No. 7 Knowlton, NE cor. Lot 8, sec. 10-4n-91w.
T.D. 3,891 ft.; reamed to bottom and cemented cave; drilling out cement at 3,730 ft.

Montezuma County

A new operation is reported in the Mancos Creek district in the Ute Indian Reservation in L. C. Osborne and others No. 32 Ute. This district has been producing some oil for several years at a depth around 300 to 500 feet, the output being refined on the ground in a skimming plant. About 30 wells have been drilled, of which three were on production last year and eight shut in. The others were abandoned. No deep test has heretofore been drilled. Production of the shallow wells does not exceed a few barrels daily when pumped.

McElmo Oil Co. No. 1 West, NE NW NE sec. 21-36n-17w.
T.D. 3,705 ft.; fishing for tools.

L. C. Osborne et al No. 32 Ute, CSL NE NE sec. 15-32n-18w.
Drlg. 320 ft.; (first report).

Larimer County

Location has been released for the Sundance test to be drilled on the Round Butte structure 6 miles south of the Wyoming line and 15 miles southwest of Cheyenne by the California Co. It is rigging up rotary on the SE SW NE section 6-11n-68, which is approximately half a mile north of a well drilled several years ago by Stanley Barrows which had a show in the top of the Sundance at 2,216 feet, followed by water in the base, and a little farther to the northeast of a well drilled by the Cactus Petroleum Co. about 20 years ago. Contract was let to Manning & Martin, Inc., successor to Manning & Terry, Inc. The elevation is 6,106 feet. First casing will be 15½-inch conductor pipe.

California Co. No. 1 State, SE SW NE sec. 6-11n-68w.
Rigging up rotary (first report).

Morgan County

Swisher et al No. 1 Lunt, 92 ft. W of E line and 360 ft. N of S line, sec. 3-4n-60.
T.D. 1,300 ft.; running 4¾-in. to bottom.

Park County

South Park Oil Co. No. 1 State, SE SE SW sec. 16-11s-75w.
Landed 6¼-in. at 3,658 ft. and underreaming to set on bottom at 3,720 ft.

South Park Oil Co. No. 1 Lebert, NE NE NW sec. 21-11s-75w.
Cellar.

Prowers County

Trojan O. & G. Co. No. 1 Lotus Oil, NW NE NE sec. 15-23-4n.
T.D. 5,890 ft.; reconditioning hole at 5,227 ft.

Routt County

Mid-Colo Pet. Co. No. 1 Omhalt, NE NE SE sec. 29-4n-87w.
T.D. 2,820 ft. in top of Morrison, underreaming 8¾-in. from 2,725 ft. to set on top of Lakota and test oil shows.

WYOMING

Albany County

The California Co. No. 3 Holst on the Quealy dome will be drilled to the west and southwest of Nos. 1 and 2 Holst. No. 1 Holst, which averaged 600 bbls. a day from the Dakota, is in the NE SE SE of section 13 and No. 2 Holst, which found the Morrison tilted on edge and is estimated at 1,000 bbls. on the pump, is in the SW NE SE of section 13. The new location was made after John Wilson's Colorado Geophysical Corp. did some additional shooting to locate the subsurface crest.

California Co. No. 2 Holst, SW NE SE sec. 13-17n-77.
T.D. 4,207 ft.; plugged back to 3,267 ft.; testing.

Ohio Oil Co. No. 2 Emery, NE SE NE sec. 18-15n-75w.
Drlg. 1,725 ft. in red beds; water in Sundance at 1,322 ft.

California Co. No. 3 Holst, 1,650 ft. W of E line and 970 ft. N of S line, sec. 13-17n-77w.
Rigging up (first report).

Big Horn County

J. W. Bales No. 1 Parker, C SW SW sec. 23-4-89.
Drlg. 683 ft.

Peter Evanoff et al No. 1 McAllister, Lot 40, NW NE SE sec. 3-55n-97w.
S.D. 2,296 ft. (cor.) for casing.

Kinney-Coastal Oil Co. No. 2 Government, SW NW NE sec. 24-56n-98w.
T.D. 4,234 ft.; redrilling at 4,082 ft.

W. S. Gilbert No. 1 Zaring, SE SE SE sec. 35-52n-93w.
Drlg. 1,041 ft.

Ohio Oil Co. No. 4 Byron Union, SW SW NE sec. 22-56-97.
Drlg. 3,293 ft. in hard sandy shale.

Ohio Oil Co. No. 1 Lindsay, SW SW NE sec. 23-56n-97w.
Spudding.

Montana-Wyoming Oil Co. No. 1 Allen, 210 ft. from N line, 936 ft. from E line, Lot 52 (SE NW SE) sec. 32-56n-97w.
T.D. 3,200 ft.; redrilling at 3,000 ft.

J. H. Shaffer No. 1 Keachie, C SW SW sec. 5-49-91.
S.D. 1,350 ft. (cor.); will seal off water at 1,270 ft.

W. O. Taylor et al No. 1 Hoskins, Lot 5 (SE SE), sec. 25-56n-97w.
T.D. 5,275 ft.; sidetracking drill stem.

Carbon County

Ohio Oil Co. No. 2 State, on the Medicine Bow structure, joint with the California Co., showed water in the Jelm sand in the top of the Chugwater (red beds) at 5,836-5,910 feet, and is plugging back to make another test of the second Sundance at 5,640-5,747 feet. On the way down a drill stem test of this sand showed water. The first sand made 130 bbls. of oil an hour with 14,000,000 feet of gas on a drill stem test and if the second sand shows up no better on the second test it will be completed in the first Sundance.

Ohio Oil Co. and California Co. No. 2 State, C NW NW sec. 36-21n-79w.
T.D. 5,910 ft.; plugged back to second Sundance to test.

Ohio Oil Co. and California Co. No. 1 Union Pacific, Acct. J, NE SW NW sec. 25-21-79w.
Coring at 4,294 ft.

Ohio Oil Co. No. 3 State, CEL SE NE sec. 34-20n-78w.
T.D. 3,225 ft.; unable to cement liner on account crooked hole; cemented back with 30 sacks; will redrill.

General Pet. Corp. No. 1 Whitford, SW SE SE sec. 24-20-84.
Coring 5,900 ft.

Shirley-Wyoming Oil Co. No. 1 Government, NW NE sec. 2-26n-80w.
Drlg. 1,300 ft.

Union Oil Co. of Calif. and Mutual Oil Synd. No. 1 Union Pacific, 1,890 ft. from E line and 1,320 ft. from S line, sec. 1-18-78w.
S.D. at 4,000 ft. to repair boilers; waiting for new drill stem.

Converse County

Although the Big Muddy field east of Casper has been producing oil for more than 18 years, it has never had a deep test to the Sundance and Tensleep until this year. Continental Oil Co. No. 60 State, which spudded last June to go to the Tensleep, failed to encounter commercial production in that horizon and continued on into the Madison to a total depth of 6,597 feet with no better results. It will plug back to the Lakota at 4,359-4,407 feet, which was fully saturated, and complete. Earlier in the year the same company's No. 9 Whiteside, on section 9-33-76, found water in the lower Sundance at 4,956-5,025 feet, and was plugged and abandoned.

Continental Oil Co. No. 60 State, NW SW NE sec. 9-33-76.
T.D. 6,597 ft.; preparing to plug back to Lakota.

John Ackard No. 1 Daniels, SW SW SE sec. 17-32-71.
Drlg. 3,050 ft.

Fremont County

Mid-American Oil Co. No. 3 Government, NW NE SW sec. 14-28-92.
Cementing 6¼-in. at 2,035 ft. in top of Embar.

Nelson & Poupiert No. 3 Enos, Lot 7, sec. 27-3n-1w.
S.D. 1,100 ft.

Hot Springs County

California Exploration Co. No. 2 Government, NW SW NW sec. 4-44-96.
T.D. 4,235 ft.; running 8⅝-in. to 3,890 ft.

Ohio Oil Co. No. 72 Millsiron Cattle Co., NE SE SE sec. 19-46n-98w.
T.D. 3,993 ft.; underreaming 7-in.; good saturation at 3,931-41 ft.; will standardize and complete.

Natrona County

Bessemer Oil Co. No. 9, CWL NE NW sec. 18-33n-82w.
T.D. 1,440 ft.; testing; making 40 bbls. oil and 40 bbls. water.

Niobrara County

Ohio Oil Co. No. 5 Lamb, C NW NE section 5-35-65, an inside well, Lance Creek field, was completed at 3,908 feet, 1 foot in the red beds. The 7-inch was cemented at 3,852 feet and the third Sundance at 3,854-3,907 feet, was swabbed in and started flowing through the 2½-inch tubing. It is flowing 45 bbls. an hour and will make around 1,000 bbls. initial.

Black Hills Ref. Co. No. 1 Wyrick, C SW NE sec. 28-36n-64w.
Derrick.

J. H. Huber Co. No. 1 Jones, NE SE NW sec. 6-35n-65w.
T.D. 4,096 ft.; plugged back to 4,070 ft.; S.D.; unable to shut off water.

Fall River Royalty & Producers Co. No. 5-L Briggs, CSL NE NE sec. 2-39n-61w.
Drlg. 385 ft.

Ohio Oil Co. No. 6 Converse Sheep, 619 ft. from E line and 680 ft. from S line, SW SE sec. 32-36n-65w.
Cellar.

Ohio Oil Co. No. 7 Converse Sheep, C NW SE sec. 32-36n-65w.
Spudding.

Ohio Oil Co. No. 5 Converse Sheep, C SE SW sec. 32-36n-65w.
Rig up.

S. & H. Dev. Co. No. 1-A Olinger, SE NE NW sec. 1-36-63.
T.D. 1,674 ft.; rigging up to pull and reset 5 3/16-in. at 1,650 ft.; to shut off Dakota water and test show in Lakota.

Park County

George T. Beck No. 1 fee, NW SE NW section 27-53-101, Cody (Shoshone) structure, was drilled to 1,690 feet and plugged back to 1,350 feet and completed in the Frontier at 1,315-31 feet for 3 bbls. a day. It is located one-third of a mile southeast of the Ohio Oil Co. No. 5-A Ripley, which made 45 bbls. a day at 4,780 feet when completed in 1928, but which subsequently turned to water.

Sweetwater County

Wilmington Oil Co. No. 1 fee, NW NW NW sec. 18-26n-98w.
Resuming at 3,115 ft.

Mountain Fuel Supply Co. No. 1 Brooks, C NW NE sec. 15-16n-104w.
T.D. 2,145 ft.; W.O.C. 10-in. cemented.

Uinta County

Druscilla Connell et al No. 5 Government, SW NW NW sec. 24-15n-118w.
Drlg. 1,070 ft.

Intermountain Pet. Corp. of Utah No. 1 Union Pacific-Hayes, SW NW SW sec. 24-19n-118w.
Drlg. 1,571 ft.

W. D. Marshall No. 1 Government, NW SW SE sec. 12-15n-118w.
Drlg. 850 ft.

Ragan Pet. Co. No. 4, NW SW NW sec. 13-15n-118w.
Drlg. 1,070 ft.

Washakie County

Ariton & Doyle No. 1 Government, SW SW SE sec. 29-48-91w.
T.D. 900 ft. (cor.).

Wyoming O. & R. Co. No. 2 Government, NW SW SW sec. 31-48-90.
Drlg. 800 ft.

Weston County

Production in the Osage field for November was 19,278 bbls. and deliveries to refineries amounted to 17,000 bbls.

Lew Fletcher No. 4 fee, CWL NW NW section 5-46-63, was dry at 561 feet

R. L. Rose No. 5, CSL SE SW section 8-46-63, which is also a first report, was completed in sand at 360-390 feet and filled 50 feet over night. It will pump 5 bbls. a day.

Conway Oil Corp. No. 1 Government, C SE NW sec. 7-41-60.
S.D. 2,087 ft. (cor.).

Beaver Creek Oil Synd. No. 1 State, C NE NE sec. 23-44-63.

Glenn Taylor No. 1 Bock, C SW NE sec. 3-45n-63w.
Drlg. below 900 ft.

Henry Egert No. 2, SW NE NE sec. 8-46n-63w.
Drlg. 170 ft.

H. D. Wiltse No. 8, CNL NW NE sec. 17-46n-63w.
Rig on location (first report).

MONTANA

Big Horn County

Big Horn O. & G. Co. No. 24, NW NE NE sec. 26-1s-33e.
Drlg. 596 ft.

Daniels Pet. Co. No. 1 May, C SE SE sec. 13-1s-33e.
T.D. 3,000 ft.; cemented 6¼-in. at 2,895 ft.; top Chugwater at 2,900 ft.

Carbon County

Bailey Round Butte Oil Co. No. 1, 1,120 ft. W of E line and 3,140 ft. N of S line, sec. 3-6s-23.
Drlg. 1,520 ft.

Choteau County

Mills & Decker No. 1, NE NW sec. 29-27n-13e.
Rig up.

Fallon County

Montana-Dakota Utilities Co. No. 1, NE NW sec. 17-3n-62e.
Coring 5,782 ft.

Fergus County

Kalispel-Kevin Oil Co. No. 2 Emmons, C SW SE sec. 20-21n-18e.
Drlg. 440 ft.

H. C. Rowland et al No. 1, NE NW NE sec. 13-17n-23e.
Drlg. 860.

H. C. Rowland No. 2, SW SW NE sec. 13-17n-23e.
Drlg. 230 ft. (first report).

E. A. Fenholt No. 1, NW NW SW sec. 21-21n-17e.
Rigging up.

Judith Operating Co. No. 1 Government, C SW SW sec. 26-22n-17e.
Drlg. 1,050 ft.

Gallatin County

Ben W. Ryan No. 1 Tice, NE NE NE sec. 28-1n-2e.
Drlg. 2,632 ft.

Glacier County

Three completions, of which two were dry holes and one a gas well, and three new operations were reported in the Cut Bank field.

PERFECTLY MATCHED THREADS
perfectly protected

SPECIFY X-L "ALL-THRED" PROTECTORS AND SAVE!

On your next pipe order from the mill specify X-L "ALL-THRED" Thread Protectors on line pipe and oil well tubing.

X-L "ALL-THRED" Thread Protectors give positive protection to pipe threads at lowest cost.

WHEELING MACHINE PRODUCTS CO
WHEELING W VA

Chemical Refining of Petroleum

By V. A. KALICHEVSKY and B. A. STAGNER

An authoritative book on a field which has long felt the lack of such a volume.

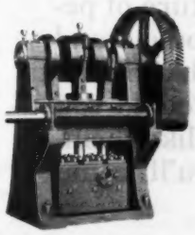
CONTENTS

Treatment With Sulphuric Acid
Sulphuric Acid Sludge From Petroleum Refining
Treatment With Alkaline Reagents
Sweetening Operations and Elimination of Elementary Sulphur
Refining by Adsorption
Use of Solvents in Refining
Reduction of Total Sulphur in Light Petroleum Distillates
Detonation and Antidetonants
Oxidation and Reduction Reactions
Gums in Cracked Petroleum Products
Inhibitors of Atmospheric Oxidation of Petroleum Products
Deterioration of Lubricating and Similar Oils
Miscellaneous Refining Processes and Reagents
Supplementary List of Patents on Petroleum Refining

Price, $7.00 postpaid

Mail your order and check to the Book Department

THE OIL AND GAS JOURNAL
TULSA, OKLAHOMA



ALDRICH

Pumps for Oil Industry

For the oil fields' particular requirements. Illustrated is Series 3111; six sizes, working pressures from 675 to 2000 pounds. Send for Data 25.

The ALDRICH PUMP CO., Allentown, Pa.

William M. Barret, Inc.

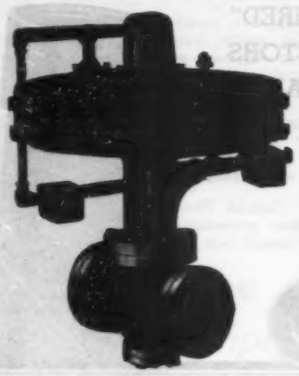
Consulting Geophysicists

Specializing in Magnetic Surveys

Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.

GIDDENS-LANE BUILDING -:- SHREVEPORT, LA.

When Tank Pressure Falls the Valve at Once Closes



CF

Duplex Vacuum
REGULATOR

The danger of pulling a vacuum in a storage tank from which gas is being discharged at low pressure, will not arise if a Fulton Duplex Vacuum Regulator is installed on the discharging line. Atmospheric pressure is maintained at all times, for when pressure is reduced to that point, the valve closes. Descriptive Bulletin No. 2449 and prices will be mailed on request.

THE CHAPLIN-FULTON MFG. CO.

28-40 Penn Avenue — Pittsburgh, Pa.

REPRESENTATIVES:

WESTCOTT & GREIS, Inc.
Sales and Service
Dallas—Tulsa

HIMELBLAU, BYFIELD & CO.
36 S. Throop St.,
Chicago, Ill.

Or any Jobber

Humble Men Know Your Problems

because they have had to face the same problems themselves, and to solve them by the manufacture of petroleum products which would stand up in actual use in the field. So we recommend Humble products to you with confidence that you'll like them. Try them, test them—you'll come back for more.

HUMBLE
OIL AND REFINING COMPANY

HOUSTON, TEXAS

Service Goes With Everything We Sell

R. C. Tarrant No. 1 Williams, C SE NE section 11-34-6w, failed to pick up either the Sunburst or Cut Bank sands and was abandoned at 2,869 feet. It topped the Ellis at 2,815 feet. It is one-third of a mile south of another dry hole and confirms a barren spot near the center of the field.

Tarrant's No. 4 Miller, C SE NE section 24-34-6w, also was dry and abandoned at 2,870 feet. The Sunburst was at 2,855-83 feet and the Cut Bank at 2,805-15 feet.

The Montana Power Gas Co. No. 2 Peterson, near C W half section 30-35-5w, was completed for 7,155,000 feet of gas at a total depth of 2,766 feet. The Sunburst at 2,665-95 feet was dry and the Cut Bank was at 2,700-60 feet. The elevation is 3,868 feet.

One of the new locations is an important test. This is Cobb-Pardee's No. 1 Stufft, C SE NW section 25-36-6w, the most northerly location in the field and 1¾ miles from the nearest producer, its No. 1 Hall, which made better than 300 bbls. initially.

A. B. Cobb No. 5 Walberger, C NE NE sec. 35-35n-6w.
Rig.

Cobb-Pardee No. 1 Stufft, C SE NW sec. 25-36n-6w.
Rig (first report).

Cobb-Reagan No. 1 Jackson, NE NW NW sec. 5-32n-5w.
Building rig.

Lon Crumley No. 2 Jones, C NE SW sec. 31-34n-5w.
Running 8¼-in. at 2,530 ft.

Fowler et al No. 1 Tweedy, SW SE SE sec. 35-33-6w.
T.D. 2,798 ft.; recovered all but 150 ft. of liner; swabbing 85 bbls. per day.

Indian Oil Co. No. 1 Britton, C NE NE sec. 14-34n-6w.
Rigging.

L. P. Jackson et al No. 1 Tribal, NW SE NW sec. 22-34n-7w.
Rigging.

R. C. Jeffries No 4 Uukena, NE NE NE sec. 12-33n-6w.
Drlg. 2,480 ft.

McCabe & Jeffries No. 1 Rasmussen, NE SW NE sec. 32-33n-5w.
Spudding.

Montana Power Gas Co. No. 1 Benish, C SW NW sec. 9-33n-5w.
Spudding 250 ft.

Montana Power Gas Co. No. 1 McDougal, C SE NW sec. 31-34n-5w.
Rig (first report).

Nadeau Bros. No. 1 Tribal, C Lot 4, sec. 6-32n-5w.
Rigging.

Neil Spencer No. 1 Tweedy, CSL SE SW sec. 25-33n-6w.
Rigging.

Santa Rita O. & G. Co. No. 1 Shearon, 660 ft. S of N line and 348 ft. W of E line, sec. 34-36n-6w.
Colo. at 750 ft.; 10-in. at 775 ft.; waiting on cement.

Santa Rita O. & G. Co. No. 1 Corey, NE NW SE sec. 5-32n-5w.
Drlg. 1,300 ft.; Colo. at 565 ft.

R. C. Tarrant No. 2 Hope, NW SW SW sec. 18-34-6w.
T.D. 2,610 ft.; fishing for bit.

R. C. Tarrant No. 4 Getty, NE NE SW sec. 2-34n-6w.
Drlg. 1,600 ft.

R. C. Tarrant No. 2 Jones, NW NW SW sec. 31-34n-5w.
Colo. at 475 ft.; 10-in. at 510 ft.; waiting on cement.

Texas Co. No. 4 fee, 1,465 ft. E of W line and 660 ft. N of S line, sec. 15-35n-6w.
Rigging up rotary (first report).

Judith Basin County

Fletcher E. Hunt is starting his third test in the Hobson area in his No. 3, 1 mile southwest of his No. 2, which had water in the Morrison at 1,233 feet. This test showed some oil in the top of the Dakota followed by water in the base.

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e.
Drlg. 250 ft. (first report).

Liberty County

The Western Natural Gas Co. No. 1 Wallace, C SW NW section 15-37n-4e, Whitlast district, was completed as a gas well in the Sunburst sand at 1,874-80 feet and gauged 4,000,000 feet with 715 pounds pressure. The same company is drilling its No. 1 Turner in the same section.

Western Natural Gas Co. No. 1 Turner, C SE sec. 15-37n-4e.
Drlg. 1,530 ft. (first report).

Petroleum County

H. H. Schmer No. 1 Government, NE SW SW sec. 11-15n-29e.
Completing as repressuring well.

Pondera County

Dave Mills No. 1 Erickson, SW SW SW sec. 3-27n-4w.
Running casing at 1,905 ft.; good show of oil.

Texas Co.'s No. 1 Unit 2, NE SW SW sec. 21-30n-5w.
Drlg. 340 ft.; top Colo. at 575 ft.; 13⅜-in. at 604 ft.

Teton County

Teton Oil Co. No. 1 Reickhoff, C NE SW sec. 14-24n-5w.
Moving in material (first report) to be drilled for Jerome Drumheller interests near town of Choteau.

Toole County

One small well was completed and three new operations were reported in the Kevin-Sunburst field. Cassidy & Crumley No. 1 Carlson, SW SE NE section 22-35n-3w, was drilled to 1,783 feet and plugged back to 1,760 feet. The Ellis-Madison was at 1,745-78 feet. It was acidized and made 15 bbls. initially.

Carscallen & Mitchener No. 1 Greeguer, C S half NE sec. 10-34n-2w.
S.D. 1,553 ft.

Cassidy & Cassidy No. 1 Veich, 220 ft. W of E line, 660 ft. N of S line, sec. 31-35-2w.
S.D. 1,630 ft.

Cook & Eddy No. 1 Kaskin, SW SW SW sec. 25-36n-2w.
Rigging (first report).

A. E. Crumley No. 3 Shaw, SE NW SE sec. 35-36n-2w.
Rig.

Eddy & Engleking No. 1 Sohn, SW cor. NE sec. 26-35n-3w.
Rigging (first report).

Huso Brothers No. 3 Government, SW NE SE sec. 14-35n-3w.
T.D. 1,185 ft.; drlg. by bit.

Fred R. Munger No. 1 Government, SW NE NW sec. 13-35-2w.
T.D. 1,546 ft.; Ellis-Madison at 1,535-46 ft.; show of oil; acidized 500 gals.; W.O.A.

W. M. Hanlon No. 2, SW NW SE sec. 27-3n-3w.
T.D. 1,712 ft.; acidized and cleaning out.

Imperial-Craig Oil Co. No. 2 Martin, 220 ft. N of S line and 1,546 ft. W of E line, sec. 18-35n-1w.
Rigging (first report).

Nepsted-Montgomery-Farther No. 1 Grass, 660 ft. W of E line and 220 ft. N of S line, sec. 17-35n-1w.
Rigging.

Ohio Oil Co. No. 8 Reeg, NW NW SW sec. 14-35n-2w.
T.D. 1,562 ft.; Ellis-Madison at 1,535-60 ft.; little oil; acidized 500 gals.; W.O.A.

L. O. Reickoff No. 2 Government, SW SW NE sec. 3-35-3w.
Drlg. 1,265 ft.; 1,500,000 ft. of gas in shale.

Stock Brothers No. 3 Haggerty, NW SW SW sec. 13-35n-2w.
S.D. 1,524 ft.

C. Leonard Smith No. 1 Eckhoff, C SE sec. 6-33n-2e.
S.D. 575 ft.

C. Leonard Smith No. 1 Federal Land Bank, C NE NE sec. 11-35n-1e.
S.D. 175 ft. for winter.

C. Leonard Smith No. 1 I. Halverson, C NE SE sec. 18-33n-2e.
S.D. 730 ft.; tested 500,000 ft. of gas at 720 ft.

C. Leonard Smith No. 1 H. Halverson, NW NE sec. 18-33n-2e.
Drlg. in; 6⅝-in. set at 1,135 ft.

UTAH

Grand County

Columbia Crude Co. No. 1 Rath, SW SE sec. 12-25s-20e.
Drlg. 148 ft. after straightening crooked hole.

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22n-22e.
Drlg. 1,425 ft.

Glenn Ruby et al No. 1 State, NE SE SE sec. 34-31s-16e.
Spudding 150 ft. in new hole.

Utah County

Diamond Oil Co. No. 4 Government, CSL SE NW sec. 16-8s-5e.
Drlg. 3,930 ft.

Washington County

Arrowhead Pet. Co. No. 1-A, SE SW NE sec. 1-42-15.
Drlg. 3,012 ft.

Anna V. Toney No. 1 Toney, CNL NE SE sec. 33-40s-11w.
Drlg. 370 ft.

W. W. Toney No. 1 Government, CNL SE SW sec. 18-41s-12w.
Drlg. 185 ft.

WILDCAT OPERATIONS

OKLAHOMA WILDCATS

Week Ending December 14

NORTHERN OKLAHOMA

Alfalfa County

Tex-O-Kan Oil Co.'s No. 1 Acre, C SW NE Sec. 14-24-11w.
Drlg. 6,732 ft.

Beaver County

Anderson & Kerr et al's No. 1 Davis, C SW SE Sec. 36-5-26 (Cimarron Meridian).
Drlg. 5,500 ft.

Beckham County

Benonine Oil Co. No. 1 Smith, SW cor. Sec. 17-8-23w.
Drlg. 715 ft.

Star Oil Co.'s No. 1 Blair, C NW SE Sec. 22-9-26w.
S.D. for csg. at 350 ft.

Caddo County

Denver Prod. & Ref. Co.'s No. 1 Sah-Can, C SE SE Sec. 33-10-10w.
T.D. 3,550 ft.; waiting for csg.

H. W. Lee et al's No. 1 Horton, NE cor. Sec. 9-6-13w.
S.D. at 2,001 ft.

F. A. Turner et al's No. 1 Sapin, NE NE SW Sec. 1-5-11w.
Drlg. 3,295 ft.

Cleveland County

Asa Lee Mayes, Inc.'s No. 1 Parsons, SW SW SE Sec. 30-9-1.
S.D. at 3,500 ft.

Hall-Briscoe, Inc.'s No. 1 Fant, SW SW NE Sec. 27-10-2w.
S.D. 7,470 ft.

Coal County

Carter Oil Co. et al's No. 1 Thompson, C S½ NE NW Sec. 24-2-9
Drlg. 6,559 ft. in Dolomite.

Southern Oil Co.'s No. 1 Fish, SW SW SW Sec. 6-1s-8.
T.D. 657 ft.; lowering 10-inch.

Comanche County

John Nicholas' No. 1 Householder, NE NE SW Sec. 3-3-10w.
S.D. 790 ft.

Geo. Pace et al's No. 1 Spencer, SW cor. SE Sec. 21-3-10w.
Drlg. 3,675 ft.

Garfield County

Earl McBride et al No. 1 Gage estate, SE NW Sec. 27-22-3w.
Waiting on 10-in. csg. at 1,090 ft.

Herndon Drlg. Co. et al's No. 1 Whitaker, SE cor. Sec. 27-24-3w
T.D. 4,942 ft.; hole full of water.

Garvin County

Mid-Continent Pet. Corp. No. 1 Butler, SW NW SW Sec. 7-3-1.
Drlg. 2,715 ft.

Orbit Oil Co. No. 1-A Federal Land Bank, SE SW SW Sec. 10-4-3.
Shut down at 3,006 ft.

Baggett & McElreath's No. 1 Camp, NE NE SE Sec. 22-4-1w.
T.D. 4,640 ft.; dry and abnd.

Grant County

Helmerich & Payne's No. 1 Crouse, C NE SW Sec. 29-25-8w.
T.D. 6,684 ft.; dry and abandoned.

Shell Pet. Corp.'s No. 1 Foster, NW SE Sec. 30-27-8w.
Drlg. 6,105 ft.

Wents Oil Corp. et al's No. 1 Wirtz (Community), SE SE NW Sec. 22-28-4w.
T.D. 5,321 ft.; dry and abandoned.

Southern Oil Co. et al's No. 1 Allen, SW SE Sec. 36-26-4w.
Drill pipe stuck at 5,208 ft.

Hughes County

Brady Oil Co. No. 1 Culver, NE SE NW Sec. 28-7-9.
Location.

Schumacher et al No. 1 Schumacher, NE NW NE Sec. 23-5-10.
Drlg. 490 ft.

Sivalls et al's No. 1 Montgomery, NW SW NW Sec. 7-9-9.
T.D. 2,040 ft.; S.D.

Kay County

Ben Head et al No. 1 Bealveal, SW cor. Sec. 8-25-1w.
Rigging up rotary at 50 ft.

Helmerich & Payne's No. 1 Roth, SW SW SW Sec. 8-28-2w.
Drlg. 4,315 ft.

A. D. Morton's No. 1 Warren, SE SE NW Sec. 19-29-4.
Drlg. 3,045 ft.

Kiowa County

Beeler & Klein No. 1 Van Kirk, NE SW Sec. 35-7-15w.
Drlg. 540 ft.

Burns & Moore's No. 1 Webster, C NE NE sec. 2-6-17w.
Drlg. 23 ft.

Rajah Oil Co.'s No. 3 Stone, C SE NE Sec. 34-7-17w.
Salt water 1,480-1,547 ft., T.D.; plugged back to 960 ft.; acidized; pumped 12 bbls. in 8 hrs.; S.D. for pumping equipment.

Lincoln County

Fred McDuff's No. 1 Jacob, NE NE SE Sec. 10-15-5.
Rig.

Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Crawford, NE NE SE Sec. 35-15-2.
Drlg. 4,325 ft.

Texas Co.'s No. 1 Andrew, NW NE SE sec. 28-14-5.
Rigging up rotary.

Texas Co.'s No. 1 Vanderpool, NW SW SE Sec. 11-16-2.
Viola 4,805 ft.; T.D. 4,869 ft.; rigging up cable tools.

Logan County

Springrose Drlg. Co. No. 1 Wright, SW SW NW Sec. 32-15-1.
Set 12-in. at 250 ft.; waiting.

Stanolind O. & G. Co., Amerada Pet. Corp. and Eason O. & R. Co.'s No. 1 Gragg, SW SW NE Sec. 20-18-4w.
Drlg. 2,901 ft.

McClain County

Arab Pet. Corp. No. 1 Autry, NW cor. Sec. 16-7-3w.
Set 15-in. csg. at 214 ft.; T.D. 245 ft.; waiting.

McIntosh County

Indian Ty. Ill. Oil Co.'s No. 1 Tancred, 1,050 ft. S and 390 ft. E of C. Sec. 9-9-14.
Running 12-in. csg. at 1,200 ft.

Murray County

Hornsby & Jones' No. 1 Sadler, NE NE NW sec. 20-1-2.
Drlg. 650 ft.

Okfuskee County

W. J. Sherry et al's No. 1 Washington, SW SW NE Sec. 21-13-7.
Coring at 4,294 ft.

Sunray Oil Co.'s No. 1 Culla, NE SW NE Sec. 13-12-8.
Hunton 3,996 ft.; new T.D. 4,005 ft.; est. 15 bbls. oil and 35 bbls. water in 24 hrs.

Oklahoma County

Mid-Continent Pet. Corp. No. 1 Dahl, NE NE NW Sec. 8-13-3w.
Drlg. 3,325 ft.

Sinclair Prairie Oil Co. et al No. 1 Heavey, NE NE NW Sec. 19-13-3w.
Rigging up rotary.

Sinclair Prairie O. & G. Co.'s No. 1 Corbett, NE NW NE Sec. 17-13-3w.
Wilcox sand 6,645-6,706 ft.; plugged back to 6,524 ft.; drlg. outside pipe at 5,550 ft.

Pittsburg County

Vaughn Production Co. et al's No. 1 Chunn, 990 ft. N and 614 ft. W of C Sec. 29-4-14.
S.D. 1,170 ft.

Pontotoc County

Gypsy Oil Co.'s No. 1 Emry, SW SW NE Sec. 15-2-6.
Drlg. 4,603 ft.

McBride, Inc., et al's No. 1 Chester, SE SE NE Sec. 26-4-4.
T.D. 1,879 ft.; dry and abandoned.

Pioneer O. & G. Co. No. 1 Bayne, SE SW SW Sec. 16-5-6.
(Old well deepening); shut down at 3,000 ft.

Southern Oil Co.'s No. 1 Perry SW SW NW Sec. 11-4-6.
Sylvan 2,735 ft.; shut down at 2,741 ft.

Pottawatomie County

Ross Oil Co. et al's No. 1 Sparkman, SE NE Sec. 33-8n-4e
Drlg. plug at 4,137 ft.

Roger Mills County

Anderson & Kerr et al No. 1 Teeter, C SE SE Sec. 2-17-25w.
Drlg. 4,110 ft.

Seminole County

Deep Rock Oil Co.'s No. 1 Robert, SW NW NW Sec. 32-9-8.
Wilcox 4,569 ft.; cored water sand 4,559-90 ft.; plugged back to 1,915 ft.

Sinclair Prairie Oil Co. et al No. 1 Harrison, NE NE NW Sec. 17-8-8.
Location.

Smith & Boettcher No. 1 Belford, SE NW NE Sec. 15-9-8.
Drlg. 350 ft.

Texas County

Cabot Carbon Co.'s No. 1 Mathews, C NW Sec. 8-3-15 (Cimarron Meridian).
Sand 2,719 ft.; estimated 6,000,000 ft. gas; drlg. 2,733 ft.

Washita County

L. P. McWhirter's No. 1 fee, SW cor. Sec. 34-8n-19w.
Cleaning out at 1,300 ft.

SOUTHERN OKLAHOMA

Atoka County

R. H. Pierce et al's No. 1 Aetna Life Ins. Co., NW SW NE Sec. 10-1n-12e.
Coring at 2,998 ft., in shale.

Vierson et al's No. 1 Williams, NE SW NW Sec. 34-2s-10.
T.D. 3,130 ft.; underreaming 8-inch csg.

Bryan County

H. B. Smith et al's No. 1 Henry, C NW NE Sec. 10-8s-7e.
Rig.

Carter County

Carter Oil Co.'s No. 1 Carter-Williams SW NE SW Sec. 27-2s-3w.
T.D. 3,088 ft., flowed 10,000 bbls. of oil in 24 hrs.; pipe stuck.

J. H. Hudson et al No. 1 Cathey, SE NE NE Sec. 6-5s-1w.
Drlg. 100 ft.

E. M. Hutchins No. 1 Moore, NE SE NW Sec. 30-4s-1w.
Location.

Louis Sikes' No. 1 Byrd, SW SE SW Sec. 4-2s-2w.
T.D. 1,727 ft.; estimated 40 bbls. oil.

Cotton County

H. N. Haustic No. 1-A Weaver, C NW NE Sec. 27-4s-13w.
Drlg. 1,610 ft.

C. A. Yoakum's No. 1 Hunter, SE cor. NE sec. 9-3s-13w.
T.D. 3,015 ft.; dry and abandoned.

Jackson County

Associated Oil Co.'s No. 1 Harrell, NE NE SE Sec. 13-1s-21w.
S.D. 1,360 ft.

Jefferson County

L. C. Heydrick No. 1 O. W. Seay, SE NW NW Sec. 31-6s-5w.
Drlg. 210 ft.

Geo. Pace No. 1 Gardner, SW cor. Sec. 23-5s-5w.
S.D. at 66 ft.

Twin State Oil Co. No. 1 Bassett, NW SW SW Sec. 16-5s-7w.
Drlg. 2,760 ft.

Johnston County

Equitable O. & G. Co.'s No. 1 Bellaey, NE SW Sec. 12-2s-4e.
Drlg. 1,435 ft.

Moore & Wirick's No. 1 Westheimer & Daube, SE NW NE Sec. 19-3s-4e.
Drlg. 1,445 ft.

Love County

Amerada Pet. Corp.'s No. 1-A Westheimer & Daube, SW SE SW Sec. 27-6s-2e.
Drlg. 3,442 ft.

Sinclair Prairie Oil Co.'s No. 1 Stockton SE SE SW Sec. 26-6s-2w
Fishing drill pipe at 7,165 ft.

Marshall County

Norman Smith's No. 1 Chestnut, NE cor Sec. 23-5s-5e.
S.D. 275 ft.

W. T. Singley et al No. 1 Halford, SW SE SW SW Sec. 22-7s-4.
Drlg. 125 ft.

W. T. Singley No. 1 Vickers, NW SW NW Sec. 22-7s-4.
Drlg. 50 ft.

Pushmataha County

C. W. Whitehead et al's No. 1 Misser, SE SW SW Sec. 35-3s-18e.
S.D. at 3,570 ft.

Stephens County

Franklin & Duncan's No. 1 Woolsey, NW NW SE Sec. 10-3s-6w (old well deepening).
T.D. 1,050 ft.; shut down.

Nash et al No. 1 Saddler, SW cor. NW NW SE Sec. 36-2n-4w.
T.D. 180 ft.; waiting for csg.

Shasta Oil Co.'s No. 1 Fuqua, NE NW NW Sec. 13-1s-7w.
Drlg. 2,900 ft.

M. T. Summings No. 1-A Aldridge, NW NE SE Sec. 15-1s-4w.
Sand 380-415 ft.; est. 10 bbls. oil and 250,000 ft. gas; shut down; no gauge.

Tillman County

Gypsy Oil Co.'s No. 1 Schenck, SE NW SE Sec. 31-1s-15w.
Drlg. 2,733 ft.

R. O. Ray No. 1 Tucker, SW NW SW Sec. 17-1s-19w.
Repairing machine at 1,070 ft.

KANSAS WILDCATS

Week Ending December 14

(Descriptions are East unless marked otherwise)

Barton County

Buchanan & Alexander No. 1 Langfeld, NE NE SW sec. 14-20-11w.
Cellar.

Hilligoss et al No. 1 Schmidt, NE cor. Sec. 27-19-11w.
Rig.

Lario O. & G. Co. et al's No. 1 Smith, SW NW NW Sec. 26-18-13w.
C.O. at 2,100 ft.

Morgan & Flynn et al No. 1 Amerine, NE cor. sec. 14-19-14w.
Cellar.

Morgan & Flynn et al No. 1 Zimmer, SE SE SW sec. 20-19-14w.
Location.

Murphy & Morgan's No. 1 Robinson, NE NE SW Sec. 21-16-14w.
Rigging up.

Torry & Feaster No. 1 Kimpler, SE NE NE Sec. 31-18-11w.
S.D. at 2,200 ft.

Torry & Feaster's No. 1 Feist, NE NE SE Sec. 29-18-11w.
Siliceous lime 3,430-32¼ ft., T.D.; Potential; pumped 246 bbls. oil in 18½ hours.

W. E. Witt's No. 1 Murry, NW NW SW Sec. 14-17-14w.
Drlg. 1,650 ft.

Wolf Creek Oil et al No. 1 Bloomer, NE NE NW sec. 36-17-11w.
Moving in material.

Butler County

Pryor & Lockhart No. 1 Boucher, NW cor. sec. 19-27-4.
Moving in material.

Clark County

Watchorn O. & G. Co. No. 3 Stevens, C NW NW sec. 21-32-21w.
Drlg. 6,319 ft.

Cowley County

Aylward & Trees Oil Co. et al No. 1 Shields, SW cor. Sec. 17-32-6.
Drlg. 1,565 feet.

Carey et al's No. 1 Short, NE NE NW sec. 6-32-4.
Shut down at 2,075 ft.

T. C. Johnson's No. 1-A Ferguson, NW SW SE Sec. 17-30-8.
T.D. 3,136 ft.; dry and abandoned.

Penwest Oil Co. No. 1 Clover, NE SE SE sec. 8-31-7.
Rigging up.

Reed & Milligan No. 1 Houston, NW NW SW Sec. 10-31-4.
Bldg. rig.

Roth & Farout No. 1 Guthrie, NW cor. Lot 14, Sec. 30-33-8.
Rig.

Roth & Faurot's No. 1 Sherwood, NE NW SW sec. 11-31-4.
Spudding.

Shawver & Wilt No. 1 Baruth, SW NW NE sec. 8-34-3.
Rigging up.

Trees Oil Co. No. 1 Garber, NE NE SW Sec. 28-31-5.
Spudding.

Winkler, Koch et al's No. 1-B Harlan, C C S½ NW NE Sec. 13-31-7.
Shut down at 1,320 ft.

Dickinson County

Dutch Oil Co.'s No. 1 Phillips, C NE NW Sec. 15-15-1e.
Shut down 2,535 ft.

Ellis County

Helmerich & Payne et al's No. 1 Kuhn, C NE quarter Sec. 16-14-20w.
Granite 3,990-4,002 ft.; T.D.; dry and abandoned.

Lario Oil & Gas et al No. 1 Walter, SE NE SW Sec. 2-12-18w.
Rig.

Shawnee Oil Co. No. 1 Koblitz, SE SW NW Sec. 23-12-18w.
Rig.

Twin Drlg. Co.'s No. 1 Goetz, SW SW SE Sec. 3-14-17w.
Oswald 3,273-3,303 ft.; T.D.; pumped 214 bbls. oil in 24 hours; will acidize.

Ellsworth County

Empire Oil & Refining Co.'s No. 1 Dolchek, SW cor. sec. 7-16-7w.
Drlg. 1,900 ft.

Slick, Pryor & Lockhart's No. 1 Sturn, NW NW SW Sec. 26-17-10w.
T.D. 3,363 ft.; dry and abandoned.

Graham County

Cusco Oil Co.'s No. 1 Kaufman, C NE NE Sec. 18-6-24w.
Rigging up.

Vickers Pet. Co. & Phillips Pet. Co.'s No. 1 Hutton, 430 ft. from E line and 330 ft. from N line of SE¼ Sec. 29-8-22w.
Fishing at 940 ft.

Grant County

Piney Oil & Gas Co.'s No. 1 Kennedy, C SW¼ Sec. 10-29-36w.
Drlg. 2,646 ft.

Greenwood County

Anderson & McGinnis No. 1 Jensen, SE SE SW sec. 30-23-12.
Rigging up.

N. C. Dunn No. 1 Dawson, C NW NE sec. 27-26-13.
Machine.
Mohawk Oil Co.'s No. 1-A Edgar, NE NE SW sec. 2-28-8.
Drlg. 2,030 ft.

Harper County

Marathon Oil Co. No. 1 Zellers, C SW NW Sec. 17-35-8w.
12-inch csg. 382 ft.; waiting at 400 ft.

Harvey County

Ok-Tex Oil Co.'s No. 1 Osborne, C SE SE sec. 6-23-3w.
Kansas City lime 2,720 ft.; drlg. 2,952 ft.
Western Kansas O. & R. Co. No. 1 Warkentin, C SW SW Sec. 1-23-2w.
Rig.

Haskell County

Helmerich & Payne's No. 1 Elliott, C SW Sec. 30-29-33w.
Standardizing at 2,600 ft.

Kingman County

D. R. Lauck's No. 1 Skilling, SE NE SW Sec. 33-27-8w.
Viola 4,332 ft.; drlg. 4,356 ft.

Norton County

Helmerich & Payne et al No. 1 Collins, C NE Sec. 11-3-25w.
Moving in material.
Lario O. & G. Co. and Elwell's No. 1 Kennedy, SW SW NW Sec. 22-3-23w.
Drlg. 1,602 ft.

Pratt County

Lario O. & G. Co., Ewell and Atlantic O. P. Co. No. 1 Lemon, SE SE NW Sec. 12-29-13w.
Rigging up.
Skelly Oil Co. et al's No. 1 Comm. Gilchrist, C SE¼ Sec. 7-28-11w.
Drlg. 4,292 ft.

Reno County

Dawe & Dustin's No. 1 Ghormley, C NE NW Sec. 17-24-7w.
Spudded and shut down.
Foraker et al's No. 1 Hiett, SE SW NE Sec. 34-24-4w.
U.R. 12-in. csg. to 1,485 ft.
McPherson Drlg. and Derby Oil Co. No. 1 Scheuchser, NE SE SW Sec. 17-24-4w.
Building rotary rig.
Olson Drlg. Co. et al No. 1 Krantz, NE NE SE Sec. 13-25-5w.
Kansas City lime 2,765 ft.; drlg. 3350 ft.
Rose Spring & Foraker No. 1 Brauer, SW SW SE Sec. 4-26-4w.
Set 10-in. at 170 ft.; waiting.

Rice County

Day's No. 1 Mason, NW NE NE Sec. 33-21-7w.
Shut down at 2,202 ft.
Detrick et al's No. 1 Monroe C NE NE Sec. 9-20-7w.
Drlg. 1,070 ft.
Detrick et al's No. 1 Conner, C NE NE Sec. 28-19-7w.
Shut down 2,765 ft.
C. E. Skiles et al No. 1 Edwards, NW NW NE Sec. 2-18-8w.
Drlg. 770 ft.
Tabor-Coleman and Atlantic O. P. Co. No. 1 Tharp, C NW NW Sec. 33-21-6w.
Drlg. 1,775 ft.
Vernon Oil & Gas and Cusco Oil Co. No. 1 Boldt, NW SW NW Sec. 10-19-10w.
Bad hole at 535 ft.
L. H. Wentz No. 1 Bushong, SW cor. Sec. 20-21-10w.
12-in. at 200 ft.; waiting.
W. E. Witt's No. 1 Hall, SE SE NW sec. 3-20-9w. Building rig.

Rooks County

F. A. Gillespie & Sons' No. 1 Low, NE NE NW Sec. 12-6-18w.
Drlg. 2,520 ft.
Murfin et al's No. 1 Wasthusta, NE NE SE Sec. 19-9-16w.
Skid rig 25 ft. north; drlg. 125 ft.
Pryor & Lockhart's No. 1 Bradley, SW SW NE sec. 21-10-16w.
Location.

Rush County

Torrey & Feaster et al No. 1 Winget, SE cor. Sec. 15-16-16w.
Moving in material.

Russell County

Central Petroleum Co.'s No. 1 Benso, SE SE SW sec. 9-14-15w.
Location.
Central Pet. Co.'s No. 1 Boxberger, NW cor. Sec. 36-15-15w.
Oswald 3,127 ft.; swabbed 10 bbls. oil per hour at 3,152 ft.; drlg. 3,155 ft.
Coralena Oil Co. No. 1 Disken, SE cor. Sec. 30-15-13w.
Rigging up.
Empire O. & R. et al No. 1 Major, SE cor. Sec. 11-14-12w.
Location.
Hartman & Blair et al No. 1 Boxberger, NW NW SW Sec. 32-13-14w.
Rigging up.
Sam Murphy et al's No. 1 Enschutz & Schaffer, SW cor. Sec. 10-15-13w.
Spudding.
Murfin et al's No. 1 Gorham estate, NE NE SE Sec. 29-14-15w.
Cleaning out at 3,030 ft.
Phillips Petroleum Co. and Sinclair Prairie Oil Co.'s No. 1 Driscoll, NW NW SE sec. 31-15-11w.
Drlg. 2,250 ft.
Warren Oil Co. No. 1 Bratton, SE cor. Sec. 25-11-13w.
Rigging up.
Winkler & Koch No. 1 McAllister, NE NE SE Sec. 9-12-13w.
Rig.

Sedgwick County

Dickey Oil Co.'s No. 1 Wilbur, SW cor. 15-27-1w.
Siliceous 3,611-20 ft., T.D.; dry and abd.

Stafford County

Herndon Drlg. Co. and Atlantic O. P. Co. No. 1 Russell, C SE NW sec. 20-21-14w.
Anhydrite 870 ft.; drlg. 2,455 ft.

Sumner County

Helmerich & Payne No. 1 Wright, SE SE NW Sec. 10-33-2.
Rigging up.
Orcutt & Stewart's No. 1 Newton, SE cor. Sec. 21-30-2.
S.D. at 50 ft.
C. Pulse's No. 1 Buss, NW cor. Sec. 12-32-2.
Fishing at 2,205 ft.
D. J. Wilson et al's No. 1 Clark, 1,320 ft. from W and 25 ft. from S line of NW Sec. 15-35-1w.
S.D. at 2,670 ft.

Trego County

Central Commercial's No. 1 Wagg, NW NW SE Sec. 17-13-21w.
Drlg. 2,773 ft.
Vickers et al's No. 1 Secor, NW NW NW Sec. 25-15-24w.
Underreaming 5-in. csg. at 4,472 ft.

Woodson County

Coulter, Davidson et al's No. 1 Paske, NW NW SE sec. 25-25-13.
Drlg. 1,500 ft.

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Shell Oil Co., No. 11 Capitan, Santa Barbara Co. ...	5- 4-30	2,264	sd. sh. drlg.
General Petroleum, No. 15 Capitan, Santa Barbara Co.	32- 5-30	323	suspended
General Petroleum, No. 16 Capitan, Santa Barbara Co.	5- 4-30	....	rig; suspended
Honolulu Oil Corp., No. 9 Elwood, Santa Barbara Co.	tideland	4,948	rd. sh. drlg.
Barnsdall-Rio Grande, No. 12 Elwood, Santa Barbara	15- 4-29	6,703	redrlg. 6,501
Barnsdall-Rio Grande, No. 6 Elwood, Santa Barbara.	15- 4-29	3,610	P.B. 3,328
Barnsdall-Rio Grande, No. 2 Elwood, Santa Barbara.	15- 4-29	6,492	suspended
Bankline Oil Co., No. 10 Elwood, Santa Barbara Co.	tideland	3,600	cmtd. 2,587
Pacific Western, No. 16 Elwood, Santa Barbara Co.	tideland	3,210	sd. sh. drlg.
Signal Oil Co., No. 6 Elwood, Santa Barbara Co. ...	tideland	961	sd. sh. drlg.
Spalding, Caroline, No. 12 Elwood, Santa Barbara Co.	tideland	....	bldg. rig
Field, G. C., No. 1 Santa Maria, Santa Barbara Co.	28-10-33	3,198	br. sh. drlg.
Fairview Oil Co., No. 1 Purisima, Santa Barbara Co.	18- 7-34	3,886	sd. sh. drlg.
Mar Monte Oil Co., No. 1 Summerland, Santa Barbara	16- 4-26	1,353	gr. sd. drlg.
Santa Barbara Oil, No. 1 Carpinteria, Santa Barbara	29- 4-25	700	sd. sh. drlg.
Dietzman, Julius, No. 1 Carpinteria, Santa Barbara Co.	8- 4-25	....	rigged up
Las Posas Pet., No. 1 Las Posas, Ventura Co.	22- 3-20	8,116	suspended
Union Oil Co., No. 1 Bardsdale, Ventura Co.	12- 3-20	5,562	sd. sh. drlg.
Monticello Oil Co., No. 1 Bardsdale, Ventura Co. ...	12- 3-20	4,011	suspended
Duke Oil Co., No. 1 Bardsdale, Ventura Co.	7- 3-19	....	rigging up
Supreme Oil Co., No. 1 Sespe, Ventura Co.	1- 4-20	725	suspended
Bankline Oil Co., No. 1 Sespe, Ventura Co.	36- 5-20	1,181	sd. sh. drlg.
Topa Oil Co., No. 1 Sespe, Ventura Co.	33- 5-19	886	br. sh. drlg.
Nelson & Co., No. 1 Sespe, Ventura Co.	28- 4-19	1,042	rd. sd. drlg.
The Texas Co., No. 1 Fillmore, Ventura Co.	29- 4-19	6,565	suspended
Laying & Jacobs, No. 1 Shiells Canyon, Ventura Co.	32- 4-19	1,006	cleaning out
El Rancho Oil Co., No. 1 South Mountain, Ventura Co.	9- 3-19	1,110	suspended
Bankline Oil Co., No. 2 South Mountain, Ventura Co.	3- 3-19	....	rigging up
Hull, James, No. 1 Santa Susana, Ventura Co.	2- 2-18	1,450	fish. D.P.
Paloma Oil Co., No. 1 Santa Susana, Ventura Co. ...	12- 2-18	2,551	suspended
Boisa Chica Oil Co., No. 1 Temescal, Ventura Co. ...	4- 4-18	3,052	sd. sh. drlg.
Dawson Oil Co., No. 1 Simi, Ventura Co.	5- 2-17	1,911	resume work
Ventura Expl. Co., No. 1 Saticoy, Ventura Co.	30- 3-22	7,073	P.B. 6,859
Prop. Service Corp., No. 1 Lloyd, Ventura Co.	24- 3-23	9,582	P.B. 9,375
General Pet., No. 1 Oxnard, Ventura Co.	26- 2-23	7,625	redrlg. 6,250
General Pet., No. 3 Rincon, Ventura Co.	tideland	3,530	sd. sh. drlg.
Honolulu Oil Corp., No. 2 Rincon, Ventura Co.	tideland	2,530	sd. sh. drlg.
Continental Oil Co., No. 2 Ojai, Ventura Co.	13- 4-23	964	sd. sh. drlg.
Continental Oil Co., No. 5 San Miguelito, Ventura Co.	15- 3-24	3,585	hd. sh. drlg.
Standard Oil Co., No. 1 Lost Hills, Kern Co.	2-26-20	5,824	recmt. 8 times
Cumberland Oil Co., No. 1 Devil's Den, Kern Co. ...	17-26-18	3,851	sd. sh. drlg.
Belmac Drlg. Co., No. 1 McKittrick, Kern Co.	22-29-21	4,486	hd. sd. drlg.
Belmac Drlg. Co., No. 2 McKittrick, Kern Co.	21-29-21	498	suspended
General Pet. Co., No. 1 South Belridge, Kern Co. ...	30-28-21	11,377	suspended
Standard Oil Co., No. 3 North Belridge, Kern Co. ...	26-27-20	8,005	reaming
Standard Oil Co., No. 4 North Belridge, Kern Co. ...	26-27-20	....	rig; suspended
Belridge Oil Co., No. 48-35 North Belridge, Kern Co.	35-27-20	4,658	suspended
Belridge Oil Co., No. 18-35 North Belridge, Kern Co.	35-27-20	....	rigging up
Belridge Oil Co., No. 6-1 North Belridge, Kern Co. ...	1-28-28	....	bldg. rig
Continental Oil Co., No. 6 North Belridge, Kern Co.	36-27-20	8,164	O.S. drlg.
Union Oil Co., No. 20 North Belridge, Kern Co.	36-27-20	8,529	sd. sh. drlg.
Union Oil Co., No. 21 North Belridge, Kern Co.	36-27-20	....	bldg. rig
Beck, Albert, No. 1 North Belridge, Kern Co.	35-28-20	631	gr. sd. drlg.
Ohio Oil Co., No. 1 Maricopa Flats, Kern Co.	11-11-22	7,278	sd. sh. drlg.
Woods & Bailey, No. 1 McFarland, Kern Co.	16-26-26	2,490	suspended
Standard Oil Co., No. 1 Delano, Kern Co.	1-25-23	2,455	gas; shut in
Standard Oil Co., No. 2 Delano, Kern Co.	1-25-23	3,256	gas; shut in
Standard Oil Co., No. 4 Delano, Kern Co.	34-24-23	2,460	gas; shut in
Standard Oil Co., No. 5 Delano, Tulare Co.	33-24-23	2,466	gas; shut in
Standard Oil Co., No. 6 Delano, Kern Co.	1-25-23	3,000	sd. sh. drlg.
Trico Oil & Gas Co., No. 1 Delano, Kern Co.	3-25-23	2,525	gas; shut in
Trico Oil & Gas Co., No. 5 Delano, Kern Co.	3-25-23	2,467	gas; shut in
Richardson & Heaston, No. 1 Kern Front, Kern Co. ...	5-28-28	2,567	suspended
McDonald & Dearin, No. 1 Kern Front, Kern Co. ...	10-28-27	1,953	O.S. drlg.
National Oil Co., No. 3 Kern Front, Kern Co.	11-28-27	1,717	cmtd. 1,617
National Oil Co., No. 4 Kern Front, Kern Co.	11-28-27	....	rig; suspended
Associated Oil Co., No. 6 Kern Front, Kern Co.....	4-28-27	....	rigged up
Oil Factors, Inc., No. 1 Kern Front, Kern Co.	6-28-27	2,976	dry; abd.
C. C. M. Oil Co., No. 10 Kern Front, Kern Co.	23-28-27	2,065	sd. sh. drlg.
C. C. M. Oil Co., No. 11 Kern Front, Kern Co.	23-28-27	....	rig; suspended
Kreighs, C. H., No. 1 Kern Front, Kern Co.	4-28-27	2,765	O.S. drlg.
Standard Oil Co., No. 6 Kern Front, Kern Co.	5-28-27	2,820	pump 80 b.d.
Standard Oil Co., No. 7 Kern Front, Kern Co.	5-28-27	2,765	sd. sh. drlg.
Standard Oil Co., No. 8 Kern Front, Kern Co.	24-28-27	....	bldg. rig
The Texas Co., No. 1 Kern Front, Kern Co.	23-28-27	2,920	pump 250 b.d.
The Texas Co., No. 2 Kern Front, Kern Co.	23-28-27	982	sd. sh. drlg.
Grace-Kern Oil Co., No. 1 Premier, Kern Co.	26-27-27	998	sd. sh. drlg.
Burcamba Oil Co., No. 1 Premier, Kern Co.	22-27-27	....	bldg. rig
Ohio Oil Co., No. 9 Premier Area, Kern Co.	32-27-27	881	sd. sh. drlg.
O. & F. Oil Co., No. 1 Premier Area, Kern Co.	32-27-27	1,850	sd. sh. drlg.
O. & F. Oil Co., No. 2 Premier Area, Kern Co.	32-27-27	....	location
Aladdin Oil Co., No. 1 Mountain View, Kern Co.	19-30-29	....	rig; suspended
Barnsdall Oil Co., No. 5 Mountain View, Kern Co. ...	32-30-29	4,531	sd. sh. drlg.
Barnsdall Oil Co., No. 6 Mountain View, Kern Co. ...	30-30-29	5,540	sd. sh. drlg.
Gilmore-Snyder, No. 4 Mountain View, Kern Co.	24-30-28	2,981	sd. sh. drlg.
Union Oil Co., No. 10 Mountain View, Kern Co.	23-30-28	5,622	suspended
Hancock Oil Co., No. 9 Mountain View, Kern Co.	14-30-28	3,754	sd. sh. drlg.
Hogan Pet. Co., No. 8 Mountain View, Kern Co.	32-30-29	5,727	cmtd. 5,430
Buffalo Oil Co., No. 1 Mountain View, Kern Co.	19-30-29	....	rigging up
Sheldon Oil Corp., No. 1 Mountain View, Kern Co.	19-30-29	....	rigging up
Vesta Pet. Co., No. 2 Mountain View, Kern Co.	19-30-29	2,511	sd. sh. drlg.
Wood-Callahan Oil Co., No. 1 Mountain View, Kern Co.	30-30-29	5,834	flow. 550 b.d.
O'Kane & Brain, No. 2 Mountain View, Kern Co. ...	30-30-29	3,930	sd. sh. drlg.
Mohawk Oil Co., No. 15 Mountain View, Kern Co. ...	30-30-29	5,960	completing
Mohawk Oil Co., No. 16 Mountain View, Kern Co. ...	30-30-29	3,968	sd. sh. drlg.
Mohawk Oil Co., No. 17 Mountain View, Kern Co. ...	30-30-29	....	rigging up
Ohio Oil Co., No. 1 Mountain View, Kern Co.	33-30-29	5,999	redrlg. 5,871
Ohio Oil Co., No. 2 Mountain View, Kern Co.	33-30-29	2,851	sd. sh. drlg.
Shell Oil Co., No. 5 Mountain View, Kern Co.	32-30-29	6,063	flow. 1,440 b.d.
Shell Oil Co., No. 6 Mountain View, Kern Co.	32-30-29	....	rigging up
Standard Oil Co., No. 15 Mountain View, Kern Co. ...	13-30-28	5,290	sd. sh. drlg.
Standard Oil Co., No. 16 Mountain View, Kern Co. ...	13-30-28	5,141	sd. sh. drlg.
Standard Oil Co., No. 17 Mountain View, Kern Co. ...	24-30-28	5,336	flow. 864 b.d.
Standard Oil Co., No. 18 Mountain View, Kern Co. ...	24-30-28	5,340	flow. 722 b.d.
Standard Oil Co., No. 19 Mountain View, Kern Co. ...	24-30-28	5,120	sd. sh. drlg.
Standard Oil Co., No. 20 Mountain View, Kern Co. ...	24-30-28	5,387	sd. sh. drlg.
Standard Oil Co., No. 21 Mountain View, Kern Co. ...	13-30-28	....	bldg. rig
Standard Oil Co., No. 22 Mountain View, Kern Co. ...	13-30-28	....	bldg. rig
Treasure Oil Co., No. 1 Mountain View, Kern Co. ...	12-30-28	....	material
Mountain View Oil Co., No. 1 Mountain View, Kern Co.	25-30-28	5,650	cleaning out
Jergins Trust, No. 5 Mountain View, Kern Co.	24-30-28	5,800	fish D.P.
Jergins Trust, No. 6 Mountain View, Kern Co.	30-30-29	5,714	cmtd. 5,435
Shell Oil Co., No. 2 Coffee Canyon, Kern Co.	7-28-29	1,352	sd. sh. drlg.
Mountain Pet. Co., No. 1 Round Mountain, Kern Co.	24-28-28	....	rigged up
Jergins Trust, No. 14 Edison, Kern Co.	13-30-29	1,229	rig to pump
Jergins Trust, No. 15 Edison, Kern Co.	13-30-29	1,171	sd. sh. drlg.
Jergins Trust, No. 16 Edison, Kern Co.	13-30-29	....	rigging up
Jergins Trust, No. 17 Edison, Kern Co.	14-30-29	....	rig; suspended
North American Oil Co., No. 3 Edison, Kern Co.	14-30-29	1,052	sd. sh. drlg.
Shell Oil Co., No. 8 Edison, Kern Co.	16-30-29	4,510	cmtd. 4,290
Shell Oil Co., No. 9 Edison, Kern Co.	15-30-29	3,232	P.B. 3,021
Shell Oil Co., No. 11 Edison, Kern Co.	15-30-29	....	location
Rogers & Osborne, No. 1 Edison, Kern Co.	19-30-30	1,447	P.B. 1,077
General Pet., No. 10 Edison, Kern Co.	24-30-29	1,428	cmtd. 1,419
General Pet., No. 12 Edison, Kern Co.	24-30-29	....	rig; suspended
Bauer, J. H., No. 1 Edison, Kern Co.	21-30-29	3,195	pump. 150 b.d.
Seeple, J. O., No. 1 Elk Hills, Kern Co.	5-30-24	5,265	suspended
Hutcheson & Osborne, No. 2 Arvin, Kern Co.	32-30-30	1,380	suspended
Arlington Prop., No. 1 Buttonwillow, Kern Co.	6-28-23	3,235	gas; shut in
Milham Exploration Co., No. 5 Buttonwillow, Kern Co.	6-28-23	3,127	gas; shut in
The Texas Co., No. 1 Buttonwillow, Kern Co.	6-28-23	2,435	gas; shut in
The Texas Co., No. 2 Buttonwillow, Kern Co.	8-28-23	2,475	gas; shut in
Superior Oil Co., No. 1 Semi-Tropic, Kern Co.	23-27-23	2,418	gas; shut in
Superior Oil Co., No. 2 Semi-Tropic, Kern Co.	24-27-24	3,021	sd. sh. drlg.
Fullerton Oil Co., No. 1 Semi-Tropic, Kern Co.	1-27-22	2,391	gas; shut in
Fullerton Oil Co., No. 2 Semi-Tropic, Kern Co.	14-27-23	2,463	gas; shut in
Fullerton Oil Co., No. 3 Semi-Tropic, Kern Co.	9-27-23	2,150	gas; shut in
Fullerton Oil Co., No. 4 Semi-Tropic, Kern Co.	26-27-23	2,395	gas; shut in
Fullerton Oil Co., No. 5 Semi-Tropic, Kern Co.	8-27-23	2,347	gas; shut in
Fullerton Oil Co., No. 6 Semi-Tropic, Kern Co.	25-27-23	2,441	gas; shut in
Fullerton Oil Co., No. 7 Semi-Tropic, Kern Co.	25-27-23	2,437	gas; shut in
Fullerton Oil Co., No. 8 Semi-Tropic, Kern Co.	25-27-23	2,439	gas; shut in
Fullerton Oil Co., No. 9 Semi-Tropic, Kern Co.	26-27-23	2,431	gas; shut in
Fullerton Oil Co., No. 10 Semi-Tropic, Kern Co.	15-27-23	2,414	gas; shut in
Standard Oil Co., No. 1 Semi-Tropic, Kern Co.	8-27-23	3,200	gas; shut in
Standard Oil Co., No. 3 Semi-Tropic, Kern Co.	7-27-23	2,355	gas; shut in
Standard Oil Co., No. 6 Semi-Tropic, Kern Co.	8-27-23	2,361	gas; shut in
Standard Oil Co., No. 8 Semi-Tropic, Kern Co.	12-27-22	2,426	gas; shut in
Standard Oil Co., No. 13 Semi-Tropic, Kern Co.	6-27-23	2,408	gas; shut in
Standard Oil Co., No. 15 Semi-Tropic, Kern Co.	16-27-23	3,215	gas; shut in
Standard Oil Co., No. 17 Semi-Tropic, Kern Co.	16-27-23	3,051	gas; shut in
Milham Expl. Co., No. 1 Semi-Tropic, Kern Co.	15-27-23	3,122	gas; shut in
Milham Expl. Co., No. 2 Semi-Tropic, Kern Co.	15-27-23	2,429	gas; shut in
Milham Expl. Co., No. 3 Semi-Tropic, Kern Co.	15-27-23	2,385	gas; shut in
Milham Expl. Co., No. 4 Semi-Tropic, Kern Co.	24-27-23	2,486	gas; shut in
Comanche Oil Co., No. 1 Comanche, Kern Co.	15-32-29	5,294	suspended
Tejon Ridge Oil Co., No. 1 Comanche, Kern Co.	23-32-29	2,187	suspended
Shell Oil Co., No. 1 Buena Vista, Kern Co.	9-32-25	9,453	dry; abd.
Ohio Oil Co., No. 1 Buena Vista, Kern Co.	31-31-26	5,302	gas; shut in
Ohio Oil Co., No. 4 Buena Vista, Kern Co.	32-31-26	903	sd. sh. drlg.
Silver Gate Oil & Gas Co., No. 1 Tejon, Kern Co. ...	7-10-19	3,005	will cmt.
Reserve Oil & Gas Co., No. 4 Tejon, Kern Co.	2-10-19	2,652	sd. sh. drlg.
Milham Expl. Co., No. 1 Huron, Fresno Co.	14-20-18	....	location
Pacific Expl. Co., No. 1 Kreyenhagen, Fresno Co. ...	17-21-17	1,600	suspended
Union Oil Co., No. 1 Lillis-Welsh, Fresno Co.	24-21-16	10,944	cmtd. 10,813
K. N. D. A., No. 54 Kettleman North, Fresno Co. ...	24-21-16	8,564	O.S. drlg.
Standard Oil Co., No. 2 Kettleman Middle, Kings Co.	29-23-19	7,885	cleaning out
Pet. Sec., No. 1 Kettleman Middle, Kings Co.	20-23-19	7,373	hd. sd. drlg.
Royalty Service Corp., No. 1 Pyramid Hills, Kings Co.	16-24-18	394	sd. sh. drlg.
Burch, I. L., No. 1 Cuyama, San Luis Obispo Co. ...	3-10-26	....	location
Farrel Pet., Well No. 1 San Luis Obispo Co.	18-31-12	1,924	sd. sh. drlg.
Birch-Royer Oil Co., No. 1 Pismo, San Luis Obispo Co.	33-31-13	1,197	sd. sh. drlg.
United Oil Co., Well No. 1, San Luis Obispo Co.	2-32-21	125	sd. sh. drlg.
Willett Oil Co., No. 1 Cholame, San Luis Obispo Co.	10-25-15	2,687	suspended
Milham Expl. Co., No. 1 Tulare Lake, Kings Co. ...	5-22-19	5,021	sd. sh. drlg.
Commonwealth Consd. Gas, No. 1 Tulare Lake, Kings	21-22-20	2,490	gas; shut in
Commonwealth Consd Gas, No. 2 Tulare Lake, Kings	21-22-20	2,052	sd. sh. drlg.
Amerada Pet., No. 1 F.L.D., San Joaquin Co.	15- 2-5	9,690	form. test
Amerada Pet., No.2 F.L.D., San Joaquin Co.	15- 2-5	4,063	producing gas
Amerada Pet., No. 3 F.L.D., San Joaquin Co.	22- 2-5	4,060	producing gas
Amerada Pet., No. 4 F.L.D., San Joaquin Co.	23- 2-5	5,075	sd. sh. drlg.
Amerada Pet., No. 5 F.L.D., San Joaquin Co.	15- 2-5	....	bldg. rig
Pure Oil Co., No. 1 Chowchilla, Madera Co.	7-10-14	8,402	gas; shut in
Pure Oil Co., No. 2 Chowchilla, Madera Co.	8-10-14	5,186	sd. sh. drlg.
Pure Oil Co., No. 3 Chowchilla, Madera Co.	6-10-14	2,561	sd. sh. drlg.

Northern Counties Pet., No. 1 Tehama, Tehama Co.	25-24-3	5,031	recmtd. 4,904	
Shell Oil Co., No. 1 Branch, Monterey Co.	34-24-10	6,683	sd. sh. drlg.	
Clark, George, No. 1 Ducor, Tulare Co.	31-22-28	1,320	suspended	
Buttes Oilfields, Well No. 3, Sutter Co.	11-15-1	5,340	recmtd. 4,944	

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Larco Oil Co., No. 1 El Segundo, Los Angeles Co.	12- 3-15	7,600	suspended
Sovereign Oil Co., No. 1 El Segundo, Los Angeles Co.	22- 3-14	8,515	sd. sh. drlg.
Pioneer Holding Co., No. 1 Moneta, Los Angeles Co.	35- 3-14	4,320	cleaning out
McDowell, O. E., No. 1 Torrance, Los Angeles Co.	35- 3-14	971	sd. sh. drlg.
Imperial Pacific Oil Co., No. 1 Redondo, Los Angeles	6- 4-14	....	bldg. rig
Clark, T. R., No. 1 Redondo, Los Angeles Co.	6- 4-14	3,475	sd. sh. drlg.
West American Oil Co., No. 1 Dominguez, Los Angeles	3- 4-13	....	rigging up
McAdams Expl. Co., No. 1 Palos Verdes, Los Angeles	31- 4-13	....	rigging up
Shell Oil Co., No. 1 Clearwater, Los Angeles Co.	13- 4-13	4,455	sd. sh. drlg.
Clayton, G. L., No. 1 Long Beach, Los Angeles Co.	31- 3-12	6,765	suspended
Standard Oil Co., No. 12 Inglewood Deep, Los Angeles	8- 2-14	3,755	P.B. 3,689
Standard Oil Co., No. 13 Inglewood Deep, Los Angeles	8- 2-14	2,924	sd. sh. drlg.
Standard Oil Co., No. 14 Inglewood Deep, Los Angeles	8- 2-14	1,171	sd. sh. drlg.
Blackline Oil Co., No. 1 Del Rey, Los Angeles Co.	27- 2-15	6,608	swabbing
Crest Oil Co., No. 1 Del Rey, Los Angeles Co.	27- 2-15	6,703	P.B. 6,665
Anglo American Oil Co., No. 1 Del Rey, Los Angeles	27- 2-15	6,939	looks wet
Union Oil Co., No. 18 Del Rey, Los Angeles Co.	27- 2-15	5,337	sd. sh. drlg.
Union Oil Co., No. 19 Del Rey, Los Angeles Co.	27- 2-15	....	bldg. rig
Union Oil Co., No. 20 Del Rey, Los Angeles Co.	27- 2-15	....	bldg. rig
Treasure Oil Co., No. 1 Del Rey, Los Angeles Co.	27- 2-15	6,157	suspended
Yant Pet. Corp., No. 1 Newhall, Los Angeles Co.	1- 3-16	960	sd. sh. drlg.
Downey Pet. Co., No. 1 Malibu, Los Angeles Co.	5- 2-18	....	rig burned
Eyer Pet. Co., No. 1 Compton, Los Angeles Co.	20- 4-13	750	suspended
Monarch Oil Corp., No. 1 Topanga, Los Angeles Co.	5- 1-16	652	cleaning out
Standard Oil Co., No. 79 Montebello, Los Angeles Co.	2- 2-12	981	sd. sh. drlg.
Standard Oil Co., No. 80 Montebello, Los Angeles Co.	2- 2-12	....	bldg. rig
Standard Oil Co., No. 81 Montebello, Los Angeles Co.	2- 2-12	....	rigging up
Standard Oil Co., No. 82 Montebello, Los Angeles Co.	2- 2-12	....	rigging up
Signal Oil Co., No. 2 Montebello, Los Angeles Co.	14- 2-10	....	bldg. rig
Woodward Oil Co., No. 2 Montebello, Los Angeles Co.	4- 2-11	2,913	cleaning out
The Texas Co., No. 1 Montebello, Los Angeles Co.	5- 2-11	7,692	suspended
The Texas Co., No. 13 Montebello, Los Angeles Co.	5- 2-11	5,828	will dpn.
Universal Consd., No. 5 Montebello, Los Angeles Co.	5- 2-11	1,971	sd. sh. drlg.
Wilshire Oil Co., No. 1 Montebello, Los Angeles Co.	5- 2-11	6,372	hd. sd. drlg.
Wilshire Oil Co., No. 2 Montebello, Los Angeles Co.	4- 2-11	3,981	cleaning out
Wilshire Oil Co., No. 3 Montebello, Los Angeles Co.	11- 2-11	4,297	suspended
North American, No. 1 Montebello, Los Angeles Co.	30- 1-10	5,498	hd. sd. drlg.
Hillman & Long, No. 1 Montebello, Los Angeles Co.	28 1-11	5,175	hd. sd. drlg.
Frontier Oil Co., No. 1 Pico, Los Angeles Co.	7- 2-11	5,246	cleaning out
Oil & Gas Associates, No. 1 Pico, Los Angeles Co.	9- 2-11	3,194	wet; susp.
Pressel & Tull, No. 1 Puente, Los Angeles Co.	30- 2-9	4,535	suspended
Fraser, N. M., No. 1 Saugus, Los Angeles Co.	31- 4-16	853	fishing
International Oil Dev., No. 1 Saugus, Los Angeles Co.	34- 5-16	2,250	sd. sh. drlg.
Great Coastal Oil Co., No. 1 Elsinore, Riverside Co.	36- 5-5	1,740	hd. sd. drlg.
Albert Pet. Co., No. 1 Murrieta, Riverside Co.	23- 7-3	2,675	hd. sd. drlg.
Commander Oil Co., No. 1 Newport, Orange Co.	29- 6-10	179	sd. sh. drlg.
Twentieth Century Oil Co., No. 1 Huntington, Orange	36- 5-11	5,118	resume work
Leaseholders Dev. Co., No. 1 Atwood, Orange Co.	26- 3-9	4,040	cleaning out
Cook Drlg. Co., No .1 Anaheim, Orange Co.	36- 3-9	2,720	sd. sh. drlg.
Standard Oil Co., No. 1 Anaheim, Orange Co.	36- 3-9	2,792	redrlg. 1,696
Hillman & Long, No. 1 San Juan, San Bernardino Co.	2- 3-8	2,418	suspended
Tehama Pet. Co., No. 1 Chino, San Bernardino Co.	33- 2-8	3,060	P.B. 1,530

GULF COAST WILDCATS

Week Ending December 14

Raccoon Bend—Austin County

Humble Oil & Ref. Co. No. 2-B-X Machemehl, 325 ft. NW of longest SE line, 2,171 ft. NE of SW line, Wm. Smeathers Survey.
Drlg. shale and lime 673 ft.

Humble O. & R. Co. No. 8-X Grawunder, 2,000 ft. SW of N .cor. and 300 ft. SE of NW line of lease, Wm. C. White Sur. Drlg. shale 3,605 ft.; 10¾-in. csg. at 1,162 ft.

Humble O. & R. Co. No. 9 Hellmuth, 3,621 ft. southeasterly along NE line from N cor., thence 150 ft. southwesterly at R/A. T.D. 3,307 ft.; rigged up to pump.

Humble O. & R. Co. No. 4-A-X Machemehl, 2,133 ft. northeasterly along the most westerly NW line from most westerly W cor., thence 141.5 ft. SE at R/A. T.D. 4,140 ft.; top sand at 4,086 ft.; 7-in. csg. at 4,097 ft.; rigged up to complete.

Humble O. & R. Co.'s No. 3 H. F. Granen. 682 ft. NE of No. 1, 150 ft. SE of NW¼ of 63.8-ac. tract, Smeathers Sur. Location.

Damon Mound—Brazoria County

Intercoastal Oil Co.'s No. 14 Wisdom, 34 ft. NE of SW line, 43 ft. NW of SE line of Lot A, Blk. 51, A. Darst Sur. Location.

Henry Wisdom's No. 4 fee, 200 ft. due W of No. 3, A. Darst Sur.
Rig up.

Hastings—Brazoria County

Humble O. & R. Co. No. 2 Nelson, 330 ft. W of E line of 40-ac. lease, H.T.&B. Survey, section 36.
16-in. csg. at 117 ft.

Humble O. & R. Co.'s No. 1 G. W. Nelson, 330 ft. N and W of SE cor. of Lot 3, Sec. 36, approx. 660 ft. W of No. 2 Cannon, H.T.&B. Sur. No. 36.
T.D. 6,013 ft.; 7-in. csg. 5,766 ft.; I.P. 26 bbls. per hour, ¼-in. choke; T.P. 900 lbs., C.P. 900 lbs.

Humble O. & R. Co.'s No. 1 J. F. Bridges, center of N 10 acres of 20-ac. lease, A.C.H.&B. Sur. No. 2.
Location.

Humble O. & R. Co.'s No. 2 J. F. Bridges, center of S 10 acres of 20-ac. lease, A.C.H.&B. Sur. No. 2.
Location.

Stanolind O. & G. Co. No. 1 F. M. Berger, 240 ft. S, 330 ft. E of NW cor. of 1,585-ac. tract, H.T.&B. Sur. No. 37.
Drlg. shale 2,810 ft.

Stanolind O. & G. Co. No. 3 Shaw, 240 ft. N, 330 ft. W of SE cor. of 120-ac. tract, H.T.&B. Sur. No. 36.
Drlg. shale 4,060 ft.

Stanolind O. & G. Co. No. 4 Surface, 320 ft. S, 990 ft. E of most westerly NW cor. of 75.9-ac. tract, A.C.H.&B. Sur. No. 2.
Coring shale 5,705 ft.

Stanolind O. & G. Co. No. 6 Sneed, 436 ft. at R/A to most southerly N line and 361 ft. R/A to most westerly E line of 225-ac. lease, A.C.H.&B. Sur. No. 2.
Drlg. sandy shale at 4,052 ft.

Stanolind O. & G. Co.'s No. 2 Shaw, 320 ft. W of most northerly NE cor. of 120-acre tract, H.T.&B. Sur. No. 36.
T.D. 5,944 ft.; 7-in. csg. 5,690 ft.; I.P. 121 bbls. in 8 hrs., ¼-in. choke; T.P. 625 lbs., C.P. 650 lbs.

Stanolind O. & G. Co.'s No 4 Drake, 330 ft. S, 330 ft. E of most westerly NW cor. of Drake 120-acre tract, H.T.&B. Sur. No. 36.
Coring shale 5,608 ft.

Stanolind O. & G. Co.'s No. 3 Pennock, 1,320 ft. S, 330 ft. E of NW cor. of 40-acre tract, H.T.&B. Sur. No. 36.
T.D. 5,776 ft.; 7-in. csg. at 5,524 ft.; running screen and tubing.

Stanolind O. & G. Co.'s No. 2 Kidd, A.C. H.&B. Sur. No. 2, 330 ft. E of most easterly W line, 416 ft. S of N line of 58.4-ac. tract.
T.D. 6,137 ft.; P.B. to 6,100 ft.; drilled cmt. to 6,105 ft.; perforated csg. to 5,980 ft.; no show; perforating at 5,977 ft. Temporarily abandoned.

Stanolind O. & G. Co.'s No. 2 Drake, 330 ft. N, 1,650 ft. W from SE cor. of 120-ac. lease, H.T.&B. Sur. No. 36.
Derrick.

Manvel—Brazoria County

Gulf Prod. Co.'s No. 5 Colby, 330 ft. from NW line of lease, 660 ft. SW of No. 8, T. Spraggins Sur.
T.D. 4,637 ft.; I.P. 452 bbls. per day, ¼-in. choke; T.P. 475 lbs.

Jay Simmons' No. 1 Wilson, center of Lot 25, H.T.&B. Sur. No. 23.
Location.

Sinclair Prairie Oil Co.'s No. 1 Michaelson, 330 ft. E of W line and midway of N and S lines, Lot 19, H.T.&B. Sur. No. 24.
Location.

J. W. Sorrells' No. 1 Swift, Blk. 21, Abst. 218, H.N. Little Sur.
Derrick.

Texas Co. No. 2 J. L. Lemmer, S 48 degrees, E 990 ft. and N 42 degrees, E 330 ft. from W corner of 150-ac. lease, T. Sproggins Survey.
Location.

Texas Co. No. 13-A Belcher, S 48 deg., E 1,131 ft. and S 42 deg. W, 330 ft. from the N cor. of lease, H. N. Little Sur.
T.D. 1,124 ft., 10-in. csg. at 1,110 ft.

Texas Co. No. 18-B Belcher, 1,583 ft. N, 42 deg. E and 956 ft. N, 48 deg. W from S cor. of H. N. Little Sur.
Rig up.

Texas Co. No. 20 Houston Oil Field Assn., 330 ft. E and 247 ft. S of NW cor. of Lot 21-A, A.C.H.&B. Sur. No. 91.
Location.

Texas Co's No. 19 Houston Oil Field Assn., 330 ft. N, 76 ft. from SW cor. of Lot No. 31, A.C.H.&B. Sur. No. 91.
T.D. 4,253 ft.; P.B. 4,142 ft.; 7-in. csg. 4,198 ft.; tested salt water, P.B. to 2,050 ft. and sidetracked at 2,102 ft.; drlg. shale and lime 2,463 ft.

Texas Co.'s No. 2 John Groce, 857 ft. S, 200 ft. E of NW cor. of Chas. O'Donnell Sur.
T.D. 5,150 ft.; 7-in. csg. 5,129 ft.; W.O.C.

Texas Co.'s No. 1 Doonan, 990 ft. N, 42 deg. E and 330 ft. S, 48 deg. E from W cor. of Lot 17, T. Spraggins Sur.
Drlg. sandy shale 6,151 ft.

Texas Co.'s No. 4 Rash, 48 deg. E, 1,650 ft. S and 42 deg. W, 330 ft. N of NE cor. of lease, T. Spraggins Sur.
Plugged back to 4,198 ft. from 4,300 ft.; 7-in. csg. 4,198 ft.; T.D. 4,300 ft.; P.B. 4,142 ft.; treated with acid, swabbing.

Texas Co.'s No. 2 Dawson, 247 ft. S, 241 ft. W of NE cor. of Lot 58, H.T.&B. Sur. No. 23.
Location.

Pledger—Brazoria County

Humble O. & R. Co.'s No. 2 Smith, 2,050 ft. NE of SW line, 1,810 ft. NW of SE line, 2,200 ft. SE of NW line, Troy & Moore Sur.
T.D. 6,720 ft.; topped sand at 6,602 ft.; 7-in. csg. at 6,227 ft.; W.O.C.

West Columbia—Brazoria County

Varner Oil Co.'s No. 1 Hogg, 800 ft. from most easterly W line and 2,600 ft. from N line of 400-ac. tract, M. Varner Sur.
Drlg. 1,010 ft.; S.D.

Port Lavaca—Calhoun County

Crown Central Oil Co.'s No. 1 Wilson, 600 ft. NW line, in center of tract, A. Esparza Sur.
T.D. 6,287 ft.; oil sand; ran screen and liner.

Anahuac—Chambers County

Domestic Exploration Co.'s No. 1 Marshall, 466 ft. out of NE cor. of A. W. Marshall 54.6 acre tract, H.&T.C. Sur., Sec. 55.
T.D. 7,150 ft., no shows, prepare to deepen.

Gulf Prod. Co. No. 2 Knowles, 200 ft. EW line, 431 ft. NS line of Sec. No. 48.
Drlg. shale and lime 3,340 ft.

Humble O. & R. Co. No. 3 Engels, 466 ft. S of N line, 466 ft. E of W line of H.& T.C. Survey No. 50.
Location.

Humble O. & R. Co. No. 7 Engels, 466 ft. N of S line, 1,009 ft. E of No. 6, H.&T.C. Survey, section 50.
Location.

Humble O. & R. Co. No. 9 Broussard, 466 ft. W of E line, 1,337 ft. S of N line of H.&T.C. Survey No. 63.
Derrick.

Humble Oil & Refg. Co. No. 1 H. A. Grippon, 466 ft. E of W line, 466 ft. S of N line of H.&T.C. Survey, section 51.
Location.

Humble O. & R. Co. No. 2 Max H. Engels, 826 ft. S of No. 3, 493 ft. N of S line, sec. 50, H.&T.C. Sur
Drlg. shale 5,896 ft.

Humble O. & R. Co.'s No. 8 Clark, 460 ft. WE line, 2,212 ft. NS line of H.T.&C., Sec. 57.
Derrick.

Humble O. & R. Co. No. 1 W. C. Tyrell, 466 ft. WE line, 466 ft. SN line of H.&T. C. Sur., Sec. 52.
Drlg. shale 850 ft.

Humble O. & R. Co. No. 2 Tyrell, 1,922 ft. SNL, 1,317 ft. WE line of H.&T.C. Sur., sec. 52.
Location.

Humble O. & R. Co.'s No. 10 Middleton, 466 ft. from N and E lines of A. Milton Sur. No. 58.
Drlg. shale 6,035 ft.

Humble O. & R. Co.'s No. 6 Broussard 2,058.4 ft. from W line, 466 ft. from N line, H.&T.C.. Sec. 63.
T.D. 7,080 ft., top sand 6,932 ft., 7-in. csg. at 7,040 ft.; W.O.C.

Humble O. & R. Co.'s No. 7 Clark, 1,205.5 ft. from N line, 466 ft. from W line, H.&T.C., Sec. 57.
T.D. 7,090 ft.; top sand 7,069 ft.; 7-in. csg. 7,064 ft.; I.P. 24 bbls. per hour, ½-inch choke; T.P. 975 lbs.

Humble O. & R. Co. No. 1 H. E. Marshall, 466 ft. N of S line, 466 ft. E of W line of 160-ac. lease, H.&T.C. Sur., sec. 50.
Derrick.

Humble O. & R. Co. No. 13 Middleton, 873 ft. E of No. 48, 466 ft. N of S line of H.&T.C. Survey, sec. 58.
Bldg. derrick.

Humble O. & R. Co., No. 6 White, 825 ft. N of No. 5, 466 ft. E of W line of lease, J. McGahey Survey.
Location.

Humble O. & R. Co. No. 3 Zappe, 859 ft. N of No. 1, 466 ft. W of E line of H.&T.C. Sur., sec. 51.
Location.

Humble O. & R. Co. No. 5 White, 466 ft. EW line, 825 ft. N of No. 4 White, J. McGahey Sur.
Drlg. sandy shale 3,767 ft.; 10¾-in. csg. at 1,496 ft.

Humble O. & R. Co.'s No. 2-B Broussard, 869 ft. E of No. 1-B, 466 ft. S of N line, Sec. 59, H.&T.C. Sur.
T.D. 7,082 ft.; top sand at 7,002 ft.; 7-in. csg. at 7,042 ft.; I.P. 610 bbls. per day, ¼-in. choke; T.P. 1,050 lbs., C.P. 1,150 lbs.

Humble O. & R. Co.'s No. 3-B Broussard 869 ft. E from No. 2-B, 466 ft. S of N line, Sec. 59, H.&T.C. Sur.
Location.

Humble O. & R. Co.'s No. 6 Clark, 1,339 ft. N of S line, 466 ft. E of W line of Sec. 57, H.&T.C. Sur.
Drlg. shale 1,665 ft.; 10¾-in. csg. at 1,539 ft.

Humble O. & R. Co.'s No. 2 Broussard 2,332 ft. E of W line, 2,332 ft. N of S line of Sec. 63, H.&T.C. Sur.
Location.

Sun Oil Co. No. 5 White, 200 ft. WE line, 467 ft. NS line of lease and survey, James McGahey Sur.
Drlg. shale and lime 2,957 ft.

Sun Oil Co. No. 6 White, 933 ft. W of No. 4, 517 ft. SN line of lease, James McGahey Sur.
Location.

Barbers Hill—Chambers County

Sinclair Prairie No. 19 Wilburn, 150 ft. W of No. 18, 50 ft. SN line of lease, Henry Griffith Sur.
Drlg. lime rock 953 ft.

Sun Oil Co.'s No. 18 Wilburn, 80 ft. N, 75 ft. E of SW cor. of tract, Wm. Hodges Sur.
Drlg. shale 2,750 ft., 13-in. csg. at 2,745 ft.

Stanolind Oil & Gas Co.'s No. 11-B Wilburn, 50 ft. E of W line, 50 ft. S of N line of tract, Wm. Hodge Sur.
Drlg. cap rock 1,734 ft.

Stanolind O. & G. Co.'s No. 29 Chambers, 234 ft. E of No. 21 W. Bloodgood Sur Derrick.

Stanolind O. & G. Co.'s No. 31 Chambers, 20 ft. S, 50 ft. W of NW cor. of Sur. A lease.
Drlg. hard shale and lime 5,487 ft.

Texas Gulf Prod. Co. No. 7 Wilburn, 70 ft. W of E line, Wm. Hodge Sur.
Drlg. broken rock 1,171 ft.

Big Creek—Fort Bend

Gulf Prod. Co.'s No. 66 Davis, 2,760 ft. NE along SE line of lease from W corner of Texas Co.'s 300-ac. lease, 1,355 ft. NW at R/A, M. Young Sur.
Drlg. sand 4,428 ft.

Marten Drlg. Co. No. 1 W. C. Moore, 35 ft. S of NW line and 111 ft. SW along NW line from N cor. of Atlantic 25-ac. Moore lease, B. Wickerson Sur.
Derrick.

Blue Ridge—Fort Bend County

Gulf Prod. Co. No. 18 "B" Bassett-Blackeley, 350 ft. E and S of NW cor. of Lot 5, Blk. "G," E. Drew Sur.
Drlg. gumbo 1,436 ft.

Texas-State Oil Co. No. 2 Bassett-Blackeley, 75 ft. NS line, 350 ft. EW line, Lot 6, Blk. "G," E. Drew Sur.
Rig up.

Boling—Fort Bend County

Texas Co. No. 15-A Taylor, 683 ft. SE of No. 11-A, 683 ft. NW of No. 12-A, S. F. Austin Sur.
Drlg. shale and lime 2,804 ft.

Orchard—Fort Bend County

Gulf Refg. Co. No. 45 Moore, 1,050 ft. E along S line from SW corner of Survey, 1,149 ft. N at R/A, German Immigration Sur. No. 8.
Derrick.

Gulf Prod. Co.'s No. 2-A Moore, Burnap Sur.
Drlg. lime 1,200 ft.

Gulf Prod. Co. No. 44 Moore, 500 ft. NW of No. 42, Leo Burknapp Sur.
Drlg. lime 3,952 ft.

Gulf Prod. Co. No. 43 Moore, 350 ft. E along S line of SW cor. of E.M.&G. Co. Sur. and 740 ft. N at R/A to said line of lease, 350 ft. E of No. 3 Moore.
T.D. 7,282 ft.; P.B. 6,698 ft.

Thompson—Fort Bend County

Gulf Prod. Co. No. 14-A Gubbles, 970 ft. S of N line, 1,345 ft. W of E line, 123-ac. tract, Blk. 6, Tract No. 3, S. Kennedy Survey.
Drlg. sand 5,380 ft.

High Island—Galveston County

Stanolind O. & G. Co. No. 1-C Marrs-McLean, 450 ft. S of N line of Lot 5, M. Dunman Sur.
Drlg. sand and lime 3,913 ft.

Stanolind O. & G. Co. No. 1-B Smith Royalty Acct., 200 ft. EW line, 1,660 ft. NS line, Susan Hope Sur. No. 3.
Abandoned 6,793 ft.

Stanolind O. & G. Co. No. 50 Cade, 350 ft. WE line, 950 ft. NS line of 460-ac. tract, N. Fitzsimmons Sur.
Drlg. shale and lime 4,390 ft.

Stanolind O. & G. Co. No. 51 Cade, 690 ft. SN line, 620 ft. WE line of 460-ac. tract, Fitzsimmons Sur.
Drlg. lime 3,020 ft.

Dickinson—Galveston County

Coast Pet. Co. No. 2 Maco Stewart, 660 ft. due W of No. 1, 330 ft. NS line of lease, W. K. Wilson Sur.
T.D. 8,657 ft.; perforating csg. from 8,632-42 ft.; I.P. 23 bbls. distillate per hour; T.P. 1,700 lbs., C.P. 2,400 lbs.

Humble O. & R. Co. No. 2 Anderson, 352 ft. WE line, 777 ft. EW line and 338 ft. NS line, Lot 2, Blk. 15, J. Sellers Sur.
Drlg. shale 6,136 ft.

Humble O. & R. Co. No. 1-B San Leon, 381 ft. SE of NW line and 300 ft. SW of NE line of S½ of Blk. 102, A. E. Edwards Sur.
Drlg. sandy shale 5,647 ft.

Humble O. & R. Co. No. 3-B Stewart, 3,954 ft. S along E line from NE cor. and 577.2 ft. W at right angles, J. Sellers Sur.
T.D. 8,618 ft.; Top sand 8,583 ft., attempted several D.S.T. but seat failed to hold; reaming.

Humble O. & R. Co. No. 6-A Maco Stewart, 6,087 ft. S of NE cor., 1,390 ft. W of E line and 1,390 ft. E of W line and 466 ft. N of S line of Stewart.
7-in. csg. 8,974 ft.; T.D. 9,142 ft.; preparing to test.

Humble O. & R. Co. No. 5-A Stewart, 466 ft. W of E line of Stewart "A" Lease, 5,500 ft. due S of No. 2-A Stewart, John Sellers Sur.
Rig.

Pure Oil Co. No. 2 J. W. Shelor, 779 ft. N, 182 ft. W of N. I. Shelar, B.B.B. &C. Sur.

T.D. 3,461 ft.; T.D. of sidetracked hole 3,092 ft.; fishing.

Stanolind O. & G. Co. No. 4 State, 935 ft. S, 11 deg. E, 15 ft. E of Pure Oil Co. No. 1 Shelor tract No. 2.
Building derrick.

Stanolind O. & G. Co. No. 3 State, 683 ft. SE of No. 1, 218 ft. N of S bank of Dickinson Bayou Sur., Tract No. 3.
T.D. 8,132 ft.; 7-in. csg. 8,080 ft.; preparing to plug off salt water.

Stanolind O. & G. Co. No. 2 State, 1,369 ft. E of No. 1 State.
T.D. 9,135 ft.; 7-in. csg. 9,120 ft.; pulling tubing to P.B.

Turman Oil Co. No. 2 Piazza, 231 ft. E of E line, 730 ft. S of N line, 945 ft. E of No. 1, J. S. Sherman Sur.
Location.

Batson—Hardin County

John Deering et al No. 3 Cruse, 175 ft. due W and 25 ft. N of No. 2 Cruse, F. H. Green Sur.
10¾-in. csg. 556 ft.; drlg. plug.

D & L. Prod. Co. No. 1 Hooks, 100 ft. S of N line, 300 ft. E of W line 26.75-ac. tract, W. Donoho Sur.
T.D. 6,502 ft.; surveying hole; no report.

John Deering et al No. 1 J. W. Whitley, 160 ft. SN line, 240 ft. EW line of 130-ac. tract, W. Donoho Sur.
S.D. 780 ft.; rigging up heavier rig.

Shell Pet. Corp. No. 2 Jackson, 190 ft. W EL, 395 ft. N of SL of lease, W. Donoho Sur.
Drlg. sand and bldrs. 2,460 ft.

Texas Co. No. 2 Christian, 510 ft. S, 460 ft. E of NW cor. of Willis Donoho League.
T.D. 4,604 ft.; running 7-in. csg.

Saratoga—Hardin County

Hines No. 2 Caswell, 3,600 ft. N of S line, 1,376 ft. E of W line of B.B.B.&C.R.R. Co. Sur. No. 72.
T.D. 3,620 ft. (corrected); oil and gas show.

Rio Bravo Oil Co. No. C-144, 160 ft. E. 330 ft. N from SW cor. of Cotton tract.
Cored sand 933 ft.; top sand 850 ft.; getting ready to set screen.

Pierce Junction—Harris County

Wright et al No. 1 Gulf "Jones fee," 100 ft. SN line and 25 ft. EW line of N 12 acres of 25-ac. lease, B.B.B.&C. Sur.
Drlg. sand and shale 3,250 ft.

J. S. Abercrombie et al No. 7 John Ritter, 535 ft. E of W line, 156 ft. N, 17 deg. 42 ft. W at right angles, James Hamilton Sur.
Drlg. shale and lime 4,679 ft.

Humble—Harris County

Texas Co. No. 39 Koehler, 1,251 ft. S and E and 150 ft. N of SW cor. of lease, J. Stevenson Sur.
Drlg. shale 3,012 ft.

Mykawa—Harris County

Danciger O. & R. Co. No. 4 Minnetex, 300 ft. WE line, 250 ft. SN line of Lot 192, Wm. Lovett Sur.
T.D. 5,155 ft., made D.S.T. from 4,910-24 ft.; showed 3,000 ft. oil, ¼-in. choke; set screen and showed salt water; P.B. to 4,870 ft.; W.O.C.

West Prod. Co. No. 6 Irwin, 370 ft. S of N line, 403 ft. W of E line of lease, W. B. Walker Survey.
Bldg. derrick.

West Prod. Co. No. 2 Medolsohn & Ryan, 462 ft. EW line and 440 ft. S of No. 1, F. J. Rothas Sur.
T.D. 4,475 ft.; I.P. 526 bbls. per day, ¾-in. choke; T.P. 1,000 lbs.

South Houston—Harris County

Stanolind O. & G. Co. District 21, center Lot 1, Blk. 62.
T.D. 4,915 ft.; 9⅝-in. csg. 3,990 ft.; I.P. 196 bbls. in 20 hours, ¼-in. choke; T.P. 350 lbs., C.P. 525 lbs.

Stanolind O. & G. Co. District 27, No. 1, center Lot 1, Blk. 102.
Coring shale 4,617 ft.

Tomball—Harris County

Humble O. & R. Co. No. 11 Reid, 466 ft. E of W line, 466 ft. N of S line of lease, C. Goodrich Survey.
Rig up.

Humble O. & R. Co. No. 1 Michel, 600 ft. NS line, 689 ft. EW line, 689 ft. WE line, C. N. Pillot Sur.
T.D. 5,556 ft.; 7-in. csg. set on bottom, W.O.C.

Humble O. & R. Co. No. 3 Milo, 466 ft. W of most easterly E line, 250 ft. S of most southerly N line of lease, C. N. Pillot Sur.
T.D. 5,550 ft.; topped sand at 5,510 ft.; 7-in. csg. at 5,550 ft.; completed; no gauge.

Humble O. & R. Co. No. 4 Gebhart, 200 ft. S of most southerly N line, 1,345 ft. E of most westerly W line, Wm. Perkins and C. W. Hahl Sur.
T.D. 5,562 ft.; 7-in. csg. at 5,554 ft.; I.P. 25 bbls. per hour, ¼-in. choke; T.P. 1,250 lbs.

Humble O. & R. Co. No. 1 Tomball Townsuite Unit No. 5, 180 ft. SN line and 75 ft. WE line, Blk. 97, J. House Sur.
Drlg. shale 3,207 ft.; 10¾-in. csg. at 932 ft.

Sun Oil Co. No. 3 Metzler, 600 ft. N of S line, 466 ft. E of W line of middle SW cor. of 117.5-ac. lease, C. N. Pillot Sur.
T.D. 5,672 ft.; 7-in. csg. 5,570 ft.; ran tubing, preparing to swab.

Sun Oil Co. No. 4 Metzler, 466 ft. E of most westerly W line and 250 ft. N of most northerly S line of lease, C. N. Pillot Sur.
Derrick.

Texas Co. No. 2 Hillegeist, 425 ft. E of W line of 199-ac. tract, J. House Sur.
Drlg. shale 4,429 ft.

Mauritz—Jackson County

Shell Pet. Corp. No. 1-A T. N. Mauritz, 632 ft. S, 466 ft. W of NE cor. of 160-ac. lease, A. Kountz Sur.
Abandoned 7,401 ft.

Big Hill—Jefferson County

Stanolind O. & G. Co. No. 3-A Pipkin & Davis, 1,430 ft. SW of NE cor. of Pipkin & Davis lease along SE line of same and 50 ft. SE at right angles, William McFaddin Sur.
T.D. 6,698 ft.; washing to bottom to rerun screen and test.

Fannett—Jefferson County

Blue Eagle Oil Co. No. 2 Junker, 225 ft. due S from No. 1 Junker, W. H. Smith Sur.
Rig up.

Blue Eagle Oil Co. No. 1 Junker, 50 ft. each way out of NW cor. of lease, W. H. Smith Sur.
T.D. 4,121 ft.; swabbing.

Gulf Prod. Co. No. 6 Junker, 930 ft. W along N line of 260-ac. tract from NE cor. and 580 ft. S at R/A, Wm. Smith Sur.
Drlg. shale and lime 3,407 ft.

Cleveland—Liberty County

Gulf Prod. Co. No. 12-C Kirby, 1,334 ft. N, 2,333 ft. E from NE cor. of J. Eldridge Sur.
T.D. 5,653 ft.; P.B. and drlg. shale 3,260 ft.

Esperson—Liberty County

General Crude Oil Co. No. 23 Esperson, 1,200 ft. N along W line of Survey from SE corner of Kokernot Sur, thence 330 ft. E at R/A Fisher Sur.
Location.

General Crude Oil Co. No. 12 Davis, 1,200 ft. NS line and 330 ft. WE line of Kokernot Sur.
Setting up rig.

General Crude Oil Co. No. 22 Esperson, 550 ft. N along W line of survey from SE cor. of D. K. Kokernot Sur., thence 1,185 ft. E at right angles.
Drlg. shale and lime 3,012 ft.

General Crude Oil Co. No. 1 Hlavaty, 467 ft. out of SE cor. of F. M. Gardner Sur.
T.D. 8,532 ft., shale, reaming.

Hankamer—Liberty County

Cretaceous Oil Co. No. 4 Ezzell, 125 ft. WE line and 132 ft. NS line of 70-ac. tract, Levi Barrow Sur.
Derrick.

Eastman-Ward No. 1 R. E. Lee, 115 ft. from N line of lease and 76 ft. W of west bank of White Bayou, Geo. Stengler Sur.
S.D. 2,707 ft.

Eljean Oil Co. No. 2 Ezzell, 600 ft. due W of No. 1, 130 ft. from N and S lines of Levi-Barrow Sur.
Abandoned 4,346 ft.

Gulf Prod. Co. No. 1-A R. J. Weiser, 770 ft. W along S line from SE cor. of survey and 423 ft. at R/A, George Stingler Sur.
Drlg. sand 3,971 ft.

Hull—Liberty County

W. B. Flynn No. 8-B Able, 50 ft. S, 300 ft. W of NE cor. of old Humble 10-ac. tract.
S.D. 1,000 ft.

Republic Prod. Co.-Houston Oil Co. No. 158 Dolbear, 170 ft. NW of No. 90 and 250 ft. SW of No. 156, J. Devore League.
T.D. 2,343 ft.; testing.

South Liberty—Liberty County

R. R. Lawrence No. 1 Vandeventer, 200 ft. SN line, 100 ft. EW line of 121-ac. tract, D. Winchey Sur.
3,510 ft.; no report.

W. S. Christian No. 1 Chambers.
T.D. 851 ft.; I.P. 25 bbls. per day.

Markham—Matagorda County

Powers Prod. Co. No. 4 Myers, 225 ft. N of No. 2, 255 ft. EW line of lease, Blk. No. 1, Wm. Haddin Sur.
Location.

Van Vleck—Matagorda County

Skelly Oil Co. No. 1 Sally Johnson, 467 ft. W of E line, 395 ft. SN line of 27-ac. tract, M. Cummings Sur.
T.D. 7,596 ft., prepare to test through perforated csg. from 7,503-96 ft.

Conroe—Montgomery County

Glenn H. McCarthy No. 2 Bertrand, 466 ft. S of N line of 8⅓ of 80-ac. lease, Wagers Sur.
Top sand 5,126 ft.; T.D. 5,133 ft.; I.P. 550 bbls. per hour; ¼-in. choke.

Sun Oil Co. No. 28 Foster.
Drlg. shale 5,958 ft.

Sun Oil Co. No. 10 Keystone Mills.
Derrick.

Port Neches—Orange County

Texas Co. No. 11 Kuhn, 620 ft. N, 330 ft. E of SW cor. of 257.74-ac. tract, Mary E. Hall Sur.
Drlg. shale and lime at 5,475 ft.

Livingston—Polk County

Hawkeye Pet. Co. No. 3 Howard, 466 ft. out of NW cor. of 75-ac. tract, A. Viesca Sur.
Location.

Hawkeye Pet. Co. No. 1 Nelson, 330 ft. N of S line, 460 ft. E of W line of 200-ac. tract, A. Viesca Sur.
T.D. 4,263 ft., swabbed dry, pulling screen to perforate 7-in. csg.

Humble O. & R. Co. No. 24 Granbury and Smith, 933 ft. SE of No. 21 and 933 ft. SW of No. 1, A. Viesca Sur.
Location.

Humble O. & R. Co. No. 22 Granbury and Smith, 933 ft. SE of No. 16 and 466 ft. from NE line of Blk. 11, A. Viesca Sur.
Location.

Humble O. & R. Co. No. 16 Granbury, 1,399 ft. from NW and 466 ft. from NE lines of Block No. 11, A. Viesca Sur.
10¾-in. csg. at 563 ft.

Ownby-Shell Pet. Corp. No. 6 Pratt, 660 ft. S of No. 1, 330 ft. W from road, A. Viesca Sur.
Digging pits.

Ownby-Shell Pet. Corp. No. 4 Pratt, 466 ft. out of NW cor. of 197-ac. lease, A. Viesca Sur.
T.D. 4,242 ft.; top oil sand 4,224 ft.; 6⅝-in. csg. at 4,224 ft.; I.P. 20 bbls. per hour, ¼-in. choke, T.P. 550 lbs.

Sun Oil Co. No. 10 Pratt, 933 ft. W of No. 9, 466 ft. NSL of lease, A. Viesca Sur.
T.D. 4,245 ft.; top oil sand 4,235 ft.; 7-in. csg. 4,235 ft.; I.P. 320 bbls. per day, ¼-in. choke; T.P. 500 lbs., C.P. 600 lbs.

Colette Creek—Victoria County

American Liberty Oil Co. No. 1 Camp, 330 ft. out of S cor. of 30-ac. lease, R. Manchola Sur.
Drlg. shale and lime 2,500 ft.

Placedo—Victoria County

American Liberty Oil No. 1 Gray, 3,960 ft. SWL, 800 ft. SEL of S.A.&M.G. Sur.
T.D. 4,768 ft.; oil and sand; reaming to set csg.

Barnsdall Oil Co. No. 2 W. R. Smith, 1,365 ft. from NE line, 328 ft. from SE line, Lot 7, A. Murray Survey.
Location.

Barnsdall Oil Co.-Costa Oil Co. No. 1 Wright, 330 ft. each way out of N cor. of 49.62-ac. tract, S.A.&M.G. Survey No. 8.
Drlg. shale 3,500 ft.

Barnsdall Oil Co. No. 3 J. M. Pickering et al, 330 ft. from R.R., 612 ft. from No. 2, offset to Smith & Gulf No. 1 Boehm, S.A.&M.G. Sur. No. 5.
Rig up.

Barnsdall-Felmont Oil Co. No. 1 Pickering and Roos, 330 ft. NE, 530 ft. SE of No. 3, S.A.&M.G. Sur. No. 5.
Drlg. shale 5,300 ft.

Barndall Oil Co. No. 2 Gray, 4,760 ft. SWL, 500 ft. SEL of S.A.&M.G. Sur. No. 8.
T.D. 4,575 ft.; 7-in. csg. 4,750 ft.; I.P. 9 bbls. per hour, 3/10 inch choke; T.P. 320 lbs., C.P. 620 lbs.

Eastern Texas Prod. Co. No. 1 Krappa, 330 ft. out of S cor. of 40-ac. tract, Lot 12, Wm. Rupley Sur.
Rig up.

C. F. McGrew No. 1 Hadley, center of 20-ac. lot, S.A.&M.G. Sur., Sec. 9, Blk. 49, Lots 1 and 2.
Location.

Smith & Gulf No. 2 Wright, 330 ft. each way out of W cor. of lease, S.A.&M.G. Sur. No. 5.
T.D. 4,768 ft.; 7-in. csg. at 4,756 ft.; failed to flow; to work over.

Sun Oil Co. No. 1 Schneider, 330 ft. from R.R., 330 ft. from SE line of Lot 132, NE offset to Sun No. 2 Marek, S.A.& M.G. Sur.
T.D. 4,772 ft.; 7-in. csg. 4,763 ft.; comp.; I.P. 16 bbls. per hour, ¼-in. choke; T.P. 450 lbs., C.P. 510 lbs.

Westgate Oil Co. No. 2 Henderson & Pickering, 700 ft. NE, 320 ft. SE of Lot 126, S.A.&M.G. Sur., Wm. Rupley Sur.
Moving in.

Westgate Oil Co. No. 1 Muska, 320 ft. out of N cor. of 9.54-ac. tract, Lot 78, S.A. &M.G. Sur.
Drlg. shale 1,550 ft.

Clay Creek—Washington County

Joe Pamykol No. 2 Clapp, 300 ft. NE of No. 1, 450 ft. SW line, 150 ft. NW line of lease, N. Clay Sur.
Skidding derrick to location.

Sun Oil Co. No. 12 Clay, 1,050 ft. NW line, 150 ft. SW line of 218-ac. tract, 300 ft. SE of No. 11, J. F. Perry Sur.
Coring 1,326 ft.

Louise—Wharton County

Pure Oil Co. No. 3 McIntyre, 2,554 ft. NE and 466 ft. NW from S cor. of survey, Sec. 25, Morris and Cummings Sur.
T.D. 5,149 ft.; 7-in. csg. at 5,123 ft.

Pure Oil Co. No. 5 Kountze, 330 ft. from SE line, 466 ft. from SW line, Morris and Cummings Sur.
Coring shale 5,128 ft.

Pickett Ridge—Wharton County

Texas Co. No. 7-A Pierce, 1,000 ft. N, 9 deg. 18 ft. E from No. 2-A, and 1,000 ft. N, 73 deg. 18 ft. W from No. 3-A, I.&G.N. Sur.
Drlg. shale and bldrs. 2,338 ft.; 10-in. csg. at 1,095 ft.

Texas Co. No. 6-A Pierce, 660 ft. N, 58 deg. E, 751 ft. S, 32 deg. E from No. 2-A, I.&G.N. Sur. No. 39.
T.D. 4,710 ft.; preparing to set 7-in. csg.

SOUTH LOUISIANA FIELDS

Anse La Butte—St. Martin Parish

Y. D. Spell No. 1 Begenaud, Sec. 117-9s-5e.
T.D. 1,252 ft. (corrected); shale; 10¾-in. csg. at 434 ft.

Bay St. Elaine—Terrebonne Parish

Texas Co. No. 11 Bay St. Elaine, 5,005 ft. S and 4,830 ft. E of NW corner of Section 17-22s-18e.
Location.

Black Bayou—Cameron Parish

Shell Petroleum Co.'s No. 29 Watkins, 3,900 ft. E, 650 ft. S of NW cor. of Sec. 17-12s-12w.
Coring sand 4,376 ft.

Shell Petroleum Co.'s No. 30 Watkins, 3,250 ft. W, 920 ft. S of NE cor. of Sec. 18-12s-17w.
Drlg. sand and shale 2,040 ft.

Shell Pet. Corp.'s No. 26 Watkins, 3,330 ft. W, 100 ft. S of NE cor. of Sec. 18-12s-12w.
Location.

Caillou Island—Terrebonne Parish

Texas Co.'s No. 25 State, Sec. 17-23s-20e.
S.D. 4,705 ft.

Texas Co.'s No. 26 State, 172 ft. from S line, 1,796 ft. from W line, Sec. 17-23s-20e.
T.D. 3,925 ft.; P.B. 3,220 ft.

Tepetate—Acadia Parish

Continental Oil Co.'s No. 1 Kern, 1,610 ft. S, 660 ft. W of SE cor. of Sec. 29-7s-2w.
Drlg. hard shale 7,896 ft.

Continental Oil Co.'s No. 1 Macabee, 990 ft. N, and 660 ft. E of SW cor. of 160-ac. tract, Sec. 32-7s-2w.
T.D. 8,349 ft. in shale; P.B. 7,200 ft.; drlg. shale in sidetracked hole at 7,528 ft.

Continental Oil Co.'s No. 1 Macantel, 990 ft. S, 660 ft. W of NE cor. of Sec. 33-7s-2w.
T.D. 8,324 ft. in sand; 5¾-in. csg. at 8,314 ft.; I.P. 360 bbls. in 16 hours, 3/16 inch choke, C.P. 1,100 lbs., T.P. 1,050 lbs.

Darrow—Ascension Parish

Humble O. & R. Co. No. 5 Gumble, 964 ft. NE from S cor. of section at R/A to SW line of Sec. 33-10s-2e.
Coring sand and shale 5,413 ft.

Humble O. & R. Co. No. 9 Gumble, 2,445 ft. NW of SE cor. of Sec. 30-10s-2e, 540 ft. NE at R/A.
Drlg. sandy shale 4,767 ft.

Sorrento—Ascension Parish

Athens Oil Co.'s No. 3 United Land, 400 ft. W of No. 2, Sec. 15-10s-4e.
Location.

Cameron Meadows—Cameron Parish

Burton Sutton Oil Co. No. 11 School Land, 500 ft. N of S line, and 423 ft. W of Sec. 16-14s-13w.
Derrick.

Burton Sutton Oil Co.'s No. 10 School Land, Sec. 16-14s-13w.
T.D. 3,526 ft.; I.P. 660 bbls. per day, ¼-in. choke; T.P. 450 lbs.

Burton Sutton Oil Co.'s No. 4 School Land, Sec. 16-14s-13w.
Derrick.

Magnolia Pet. Co. No. 15 Cameron Meadows, 650 ft. S of N line of Sec. 21, 500 ft. SE of No. 9, Sec. 21-14s-13w.
T.D. 3,664 ft.; P.B. 3,625 ft. and sidetracked; coring sand 4,399 ft.

Choctaw Dome—Iberville Parish

Standard Oil Co.'s No. 8 Myrtle Grove Wilburt, 500 ft. N, 725 ft. W of SE cor. of SW¼ of Sec. 52-9s-11e.
12¾-in. csg. 836 ft.; W.O.C.

Standard Oil Co.'s No. 6 Gay, 400 ft. N, 50 ft. W of No. 5, Sec. 52-9s-11e.
Comp. canal.

Zeni Oil Co.'s No. 1 Schwing, Sec. 19-17s-24e.
T.D. 5,803 ft. in sidetracked hole; abd.

Edgerly—Calcasieu Parish

J. G. Sutton No. 16 Lillard, Sec. 28-9s-11w.
T.D. 1,520 ft., 7-in. csg. 1,461 ft.; prepare to pump.

Four Isle—Terrebonne Parish

Texas Co.'s No. 6 State, 1,933 ft. S, 2,100 ft. W of NE cor. of Sec. 23-21s-14
T.D. 7,528 ft.; reaming at 7,005 ft.

Texas Co.'s No. 5 State, 885 ft. S, 2,327 ft. E of NW cor. of Sec. 24-21s-16e.
Location.

Garden Island Bay—Plaquemines Parish

Texas Co.'s No. 17 State, 1,970 ft. N, 1,648 ft. E of SW cor. of Sec. 27-22s-23e.
Drlg. shale 4,337 ft.

Texas Co.'s No. 18 State, 1,368 ft. N, 2,318 ft. E of SW cor. of Sec. 27-22s-23e.
Location.

Texas Co.'s No. 12 State, 2,391 ft. S and 1,604 ft. W of NE cor. Sec. 107-23-32.
Rig up.

Gillis—Calcasieu Parish

Fohs Oil Co. No. 9 Castle, 517 ft. S and 330 ft. E of No. 3, Sec. 13-9s-8w.
Location.

Fohs Oil Co. No. 1 Wasey, Sec. 14-9s-8w.
Drlg. shale 3,310 ft.

Fohs Oil Co.'s No. 1 Powers, Sec. 14-9s-8w.
T.D. 7,062 ft.; 7-in. csg. 6,995 ft.; W.O.C.

Texas Co. No. 7 Nickerson, Sec. 12-9s-8w.
Drlg. shale and lime, 5,450 ft.

Union Sulphur Co. No. 5 Mayo-Reeves, 810 ft. E and 447 ft. N of SW corner of NW¼ Sec. 19-9s-6w.
Drlg. shale 1,510 ft.

Union Sulphur Co. No. 15 State, 225 ft. S, 164 ft. W of NE corner of NW corner of NW¼ of Sec. 12-9s-8w.
Location.

Union Sulphur Co. No. 16 State, 1,100 ft. N, 1,443 ft. W of SE corner of NW¼ of Sec. 11-9s-8w.
Location.

Union Sulphur Co. No. 17 State, 241 ft. N and 659 ft. E of SE corner of NW¼ of NW¼ of Sec. 12-9s-8w.
Location.

Union Sulphur Co.'s No. 4 Castle, 330 ft. N, 1,850 ft. W of SE cor. of NE¼ of Sec. 14-9s-8w.
Drlg. shale 6,837 ft.

Union Sulphur's No. 4 Powell, 585 ft. S, 1,631 ft. E of NW cor. of Sec. 12-9s-8w.
Cemented csg. in oil sand; T.D. 6,724 ft.

Union Sulphur Co.'s No. 7 State, 1,316 ft. N, 199 ft. E of SW cor. Sec. 12-9s-8w.
Location.

Union Sulphur Co.'s No. 13 State, 1,464 ft. E, 2,038 ft. N of SW cor. of Sec. 12-9s-8w.
Location.

Union Sulphur Co. No. 14 State, 1,462 ft. N, 69 ft. W of SE cor. NE¼ of Sec. 11-9s-8w.
Drlg. shale 5,748 ft.

Gueydan—Vermilion Parish

Pure Oil Co.'s No. 6 Alliance Trust, 667 ft. E, 1,767 ft. S line of lease, Sec. 34-11s-1w.
T.D. 9,545 ft.; circulating at 5,154 ft.

Hackberry—Cameron Parish

Browning Oil Co.'s No. 1 Ellender, Sec. 27-12s-10w.
T.D. 3,356 ft.; 6⅝-in. csg. at 3,340 ft.; failed to flow, cutting and pulling csg.

Gulf Refg. Co.'s No. 19 Erwin, 1,315 ft. W along S line of the SE cor. of Sec. and 960 ft. at R/A to S line, Sec. 13-12-10w.
T.D. 8,193 ft.; P.B. and sidetracked 5,100 ft.; abd. in shale and lime at 5,556 ft.

Stanolind O. & G. Co.'s No. 10-B Gulf Land, Sec. 14-12s-10w.
T.D. 5,880 ft.; 7⅝-in. csg. 5,052 ft.; I.P. 720 bbls. per day.

Stanolind O. & G. Co.'s No. 9 Gulf Land, 1,650 ft. S, 750 ft. W from NE cor. SW¼ of Sec. 14-12s-10w.
T.D. 6,016 ft.; testing.

Texas Co.'s No. 11 State, 961 ft. E, 152 ft. N of NE cor. of Sec. 13-12s-9w (workover).
T.D. 6,602 ft.; 5-in. csg. 6,523 ft.; set screen to test.

Texas Co.'s No. 18 State, N 13 deg. 30 ft. W, 4,000 ft. from No. 13. Sec. 44-12s-9w.
T.D. 7,259 ft.; fishing.

Iowa—Jefferson Davis Parish

Shell Pet. Corp.'s No. 19 Heyd, 1,200 ft. S, 990 ft. W of NE cor. of NW¼ of Sec. 13-9s-7w.
T.D. 5,088 ft.; prepare to make D.S. test.

New Iberia—Iberia Parish

Harrison & Abercrombie's No. 4 Schwing. Sec. 56-12s-7e.
Top salt 7,194 ft.; T.D. 7,200 ft.; P.B. to 6,640 ft.; milled out at 6,590 ft. to test sand at 6,796-6,803 ft.

Kites Oil Co.'s No. 1 Sealy, Sec. 56-12s-7e.
S.D. 3,300 ft.

Jennings—Acadia Parish

Yount Lee Oil Co.'s No. 15 Houssiere-Latriele.
T.D. 7,306 ft.; 7-in. csg. 7,268 ft.; run tubing.

Lafitte—Jefferson Parish

Texas Co. No. 3 Rigolettes, sec. 30-17s-24e.
Location.

Texas Co. No. 3 Lafitte, Sec. 19-17s-24e.
Drlg. shale and lime 5,598 ft.

Texas Co.'s No. 2 Rigolet Co-operative Co., 467 ft. S, 1,194 ft. W of NE cor. Sec. 30-19s-24e.
Drlg. shale and lime 6,757 ft.

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 4 LaFourche Basin Levee Board, 500 ft. N of No. 3, sec. 15-18s-25e.
Location.

Gulf Ref. Co. No. 7 Allen Lands, 600 ft. N of S line and 200 ft. W of No. 1, sec. 26-21s-32e.
Rig up.

Lake Barre—Terrebonne Parish

Texas Co.'s No. 34 State, Sec. 40-21s-19e.
T.D. 4,014 ft.; P.B. and S.T. at 2,800 ft.; TD. 3,758 ft.

Lake Pelto—Terrebonne Parish

Texas Co.'s No. 14 State, Sec. 8-22s-18e.
Drlg. shale 6,962 ft.

Leesville—LaFourche Parish

Texas Co.'s No. 40 Leesville, Sec. 27-21s-22e.
Drlg. shale and lime 4,047 ft.

Texas Co.'s No. 39 Leesville, 125 ft. S, 1,481 ft. W of NE cor. SE¼ of Sec. 27-21s-22e.
P.B. to 1,250 ft. and sidetracked; drlg. shale and shells 3,159 ft.

Texas Co.'s No. 25 Leesville.
Derrick.

Texas Co.'s No. 23 Leesville, 975 ft. S, 1,975 ft. W of NW cor. of SW¼ Sec. 26-21-22.
Derrick.

Roanoke—Jefferson Davis Parish

Glassell and Gulf Prod. Co. No. 1 T. A. Anding, 217 ft. N and 375 ft. W of SE cor. of sec. 2-9s-4w.
Derrick.

Glassel et al's No. 1 La. Irrigation Mill Co., 695.5 ft. E and 475 ft. N of SW cor Sec. 1-9s-4w.
Location.

Humble O. & R. Co.'s No. 3 Kratzer, 1,333 ft. NS line, 440 ft. WE line of M. Kratzer 120-ac. tract, Sec. 11-9s-4w.
T.D. 8,887 ft.; P.B. to 6,800 ft.; drlg. shale and lime 7,520 ft.

Shell Pet. Corp. No. 2 Carter, 330 ft. E and 187 ft. N of SW cor. of sec. 1-9s-4w.
Bldg. road.

St. Martinville—St. Martin Parish

Coastal Oil Co. No. 1 A. O. Ladeaux, in center of tract and 226 ft. E of W line of sec. 5n-11s-6e.
Location.

Coastal Plains Oil Corp. No. 1 E. D. Breaux, 236.5 ft. from W line, 201 ft. from N line of Sec. 57-11s-6e.
Location temp. abd.

Coastal Plains Oil Corp. No. 1 A. L. Domengeaux, 330 ft. from W line, 120.5 ft. from N and S lines of 50-ac. Arpent tract, Sec. 57-11s-6e.
Spudded.

Tide Water Oil Co. No. 2 Smedes, 660 ft. S, 660 ft. W of NW cor. of Smedes tract, Sec. 57-11s-6e.
Coring shale 5,210 ft.

Sweet Lake—Calcasieu Parish

Pure Oil Co.'s No. 13 Yount Lee, 800 ft. S, 66 deg. 42 ft. E of No. 12, Sec. 13 12-13.
T.D. 7,701 ft.; reaming.

Sulphur—Calcasieu Parish

Union Sulphur Co.'s No. 315 fee, Sec. 29-9s-10w.
T.D. 4,593 ft.; P.B. and sidetracked at 2,795 ft.; drlg. shale 3,100 ft.

Union Sulphur Co.'s No. 316 fee, Sec. 29-9s-10w.
T.D. 5,336 ft.; P.B. to 3,500 ft.; drlg. shale 3,730 ft.

Union Sulphur Co.'s No. 317 fee, Sec. 29-9s-10w.
T.D. 2,960 ft.; prepare to pump.

Starks—Calcasieu Parish

Gulf Prod. Co.'s No. 38 Lutcher Moore, Sec. 19-19s-12w.
Drlg. sand rock 3,665 ft.

L. R. Welhite No. 1 Industrial Lbr. Co., 675 ft. W and 100 ft. S of NE cor. of NE¼ of SE¼ of sec. 19-9s-12w.
Location.

White Castle—Iberville Parish

Shell Pet. Corp.'s No. 2 Shingle, 250 ft. S, 275 ft. E of NW cor. of Shingle lease.
T.D. 5,213 ft.; salt.

Miscellaneous Wildcats

TEXAS

Brazoria County

British-American Oil Prod. Co.'s No. 1 W. R. Nash, 1,191 ft. E of W line, 335 ft. S of N line of Thos. Almberry League.
Made D.S.T. from 4,125-42 ft.; no results; will core to 4,147 ft. and run screen; shut down.

Gulf Prod. Co.'s No. 1 Wilkes & Smith, 5,510 ft. W along N line of 850-ac. tract from NW cor. of 211-ac. tract, thence 990 ft. S at R/A James Hall Sur.
T.D. 6,647 ft.; P.B. to 6,300 ft.

R. R. Osborne's No. 1 John L. Jones, 330 ft. each way out of N cor. of 8½ of Lot 7, Blk. 1, J. C. Smith Sur.
S.D. 20 ft.

Texas Co.'s No. 2 Freeport Sulphur Co., Conception Areola Sur.
Drlg. sandy shale 4,072 ft.

Burleson County

Carl Dyer et al's No. 1 C. W. Young, 750 ft. EW line, 330 ft. SN line of 140-ac. tract, John Byrd Sur.
Drlg. shale 1,150 ft.; no report.

Red Bank Oil Co.'s No. 1 Q. B. Crain, 330 ft. from N and W lines of 140-ac. tract and W. C. Pierce Sur.
Location.

Chambers County

Black Gold Oil Co.'s No. 1 Borrow, 6,423 ft. NW of the SE line, 3,080 ft. SW of NE line. Ruben Borrow Sur.
Drlg. shale at 5,000 ft.

Salt Dome Oil Co. No. 2 Lawrence, 466 ft. N of N line of Mrs. Julia H. Casey 532.05-ac. tract and 466 ft. W of most westerly E line of A. B. Lawrence 233.05-ac. tract, Solomon Barrow Sur.
Location.

South Gulf Oil Co.'s No. 1 J. T. White, 1,653 ft. from E line, 466 ft. from S line of 1,476-ac. tract, James McGahey Sur.
Location.

Stanolind O. & G. Co.'s No. 1 A. B. Middleton, 426 ft. from W line, 466 ft. from S line of A. D. Middleton 120-ac. tract, Shadrock Burney Sur.
T.D. 6,626 ft.; 15-min. D.S.T. from 6,571-6,626 ft.; tested 39 thribbles oil, 1 thribble drlg. mud and wash water, ¼-in. choke; W.P. 100 lbs.; 7-in. csg. cmtd. at 6,589 ft.; drlg. plug.

Calhoun County

Continental Oil Co. No. 2-A American Realty Co., 150 ft. NE of No. 2, Pedro Garcia Sur., Lot 1, Blk. "C."
Drlg. shale 4,840 ft.

Humble O. & R. Co.'s No. 1 Mrs. Eliza Welder, 5,685 ft. S, 55 deg. W from a part of intersection of St. L.B.&W. R.R. Sur. and NW line of Jose Maria Rios Sur., 7,210 ft. S, 35 deg. E at R/A Gardner Smith Sur.
Drlg. shale 3,350 ft.

Colorado County

Coyle & Concord's No. 1 fee, 550 ft. from N line, 1,950 ft. from E line of Sec. 45 I.&G.N. Sur.
Drlg. shale 4,635 ft.

Galveston County

Sun Oil Co.'s No. 1 J. D. Hughes, 1,660.9 ft. NW line, 1,212 ft. NE line of W. M. C. Baker Sur.
Drlg. shale 5,620 ft.

Grimes County

Dr. Marshall et al's No. 1-B Todd, 300 ft. from E line and 175 ft. from N line of 150-ac. tract in extreme NW cor. of county (25 ft. N of No. 1).
T.D. 2,826 ft.; P.B. to 2,818 ft.; well flowing brackish water with small amount of gas through ¼-in. choke.

Harris County

A. C. Hill's No. 1-A Swilley 5,426 varas E of W line and 1,960 varas N of S line of Sur.-C. Victor Blanco Sur.
Spudded and S.D.

A. C. Hill's No. 1-B Swilley 6,141 varas E of W line, 1,960 varas N of S line of Sur., center of 200-ac. lease, 365 varas S of N line and 773 varas W of E line of lease, Victor Blanco Sur.
S.D. 5,503 ft.; high wtr.

Texas Gulf Prod. and Bunte O. & G. Co. No. 1 West Moreland Dev. Co., 225 ft. W, 450 ft. S of SW cor. of J. C. McKenzie Sur., J. B. Pier Sur.
Moving in material.

E. E. Young, tr.'s No. 2 P. S. Griffith, 1,476 ft. S of N line, 2,030 ft. E of W line of A. R. Bodman Sur.
S.D. 4,485 ft.; waiting on csg.

Hardin County

Frank Beaudoin et al's No. 1 Walton, A. L. Lancaster Sur.
S.D. 1,900 ft.

Houston County

Zeni Oil Co.'s No. 1 Houston County Timber Co., I.&G.N. Sur.
Abd. 7,037 ft.

Jackson County

L. A. Douglas' No. 1 I. N. Mitchel, 750 ft. W, 150 ft. N from NW cor. of A. F. Mitchell 100-ac. tract, Lolita area, S. F. Austin Sur.
Drlg. shale 3,510 ft.

Jefferson County

Glenn McCarthy, Inc., No. 1 C. W. Howth, 2,330 ft.; 466 ft. SN line of survey, T.& N.O. Sur., sec. 10.
Moving in rig.

Humble O. & R. Co. No. 1 Mrs. Effie Willerton, 1,000 ft. WE line of Sec. 1, and midway between N and S lines of a 25-ac. tract, H.T.&B. Sur., Sec. 1-A38.
Drlg. shale 3,962 ft.; 10¾-in. at 1,502 ft.

Sun Oil Co.'s No. 1 Herbert & Braunsere 6,890 ft. NW along SW line and 660 ft NE at R/A to SW line, B. Blackman Sur., Abst. No. 2.
Shale 3,282 ft.; 9⅝-in. csg. 3,310 ft.; Fishing for cutting tool.

Tatum and Pondergrass No. 1 B. W. Owens, 180 ft. E of W line and 335 ft S of N line of Lot No. 2, Blk. 9, Range 9, Port Arthur Land Co. subdv., Joseph Grigsley Sur.
Reaming 400 ft. off bottom; no report.

Matagorda County

Continental Oil Co.'s No. 1 Feife, J. S Criswell Sur., 3,000 ft. E of W line, 2,800 ft. N of S line of survey.
T.D. 7,485 ft.; 8⅝-in. csg. twisted off drill collar and bit at 7,516 ft.; sidetracked and drilled to 7,541 ft.; trying to recover 4-inch drill pipe.

Hammon Exploration Co.'s No. 1 Cleveland, 330 ft. NS line, and WE line of 62-ac. tract, E. Hall Sur.
Reaming to set 7-in. csg. at 8,400 ft.

Helmerich & Payne's No. 1 Hawkins, 550 ft. S, 70 deg. W of Cockburn Oil Co.'s No. 6 Hawkins.
Coring shale 7,028 ft.

Horace M. Smith, Inc.'s No. 1 Wadsworth ranch, 150 ft. out of S cor. of Lot No 8, S. R. Fisher Sur.
T.D. 8,853 ft.; I.P. 15 bbls. per day; flowing by heads.

Sterling O. & R. Co.'s No. 1 Baer Estate, 5,274 ft. SW of S cor. of Van Dorn and Bates Sur., 400 ft. NW at right angles in Samuel Hart Sur.
T. D. 1,820 ft.; 10¾-in. csg. set at 1,820 ft.; W.O.C.

Sun Oil Co.'s No. 1 Craig, 1,546.9 ft. SW from N cor. along NW line of lease and survey, thence 157.3 ft. SE at right angles in Thomas Williams Sur.
Drlg. shale 1,960 ft.

Montgomery County

W. C. Battaile's No. 1 Caswell, 2,490 ft. from E line, 150 ft. from S line of survey, David Davis Sur.
10-in. csg. 350 ft.

Seabreeze & Smith No. 1 Delta Land & Timber Co., 330 ft. from most westerly SW cor. of Thomas Shepperd Sur.
Moving in rig.

W. M. S. Thomson's No. 1 Scott, 1,191 ft SN line, 462 ft. WE line, 1,623 ft. EW line of the F. A. B. Wheeler Sur.
T.D. 3,674 ft.; P.B. to 2,486 ft.; W.O.C.

Orange County

Blue Line Oil Co.'s No. 1 J. E. Peet Richard, 900 ft. W of E line and 150 ft. S of N line of most easterly NE cor of 138-ac. tract. Bailey Sur.
Drlg. shale 2,430 ft.

Coker Oil Co.'s No. 1 S. T. Mansfield, 500 ft. S. 500 ft. W from NE cor. of 80-ac. tract, J. W. Hall Sur.
S.D. 1,280 ft.

Smith & Ellis' No. 1 Pell.
T.D. 2,095 ft.; changing rigs.

Polk County

O. C. Davis et al No. 1 Knox, 1,450 ft. W and 1,920 ft. S of the NE cor. of survey, F. Chairs Sur.
Rig up.

Refugio County

Cecil Hagen et al's No. 1 Edith Clarkson, 1,736 ft. from N line, 2,520 ft. from E line of J. Coughlin Sur.
Location.

San Jacinto County

Cockburn & Hargrove No. 1 Dixon & Falvey, 2,579 ft. S, 150 ft. E of NE cor. of Solomon Cole Sur., Christian Smith Sur.
Location.

John Deering et al's No. 1 Randolph, 330 ft. S of center of N line of Tract 7 of the Randolph Sud., V. Flores Sur.
Location.

J. E. Hooper et al's No. 1 R. B. Love, 475 S of N line, 2,000 ft. W of E line, 177-ac. tract, Drury McGee Sur.
Drlg. shale 2,524 ft.

Trinity County

Boone Bros.' No. 1 A. Williamson, 250 ft. SN line and EW line of lease of 60-acre tract and survey, 10 miles N of Trinity, B.B.B.&C. Sur. A-111.
Abd. 2,809 ft.

Victoria County

Heep Oil Corp.'s No. 1 J. J. Welder, 300 ft. SW line, 750 ft. from SE line of Nursery area, Phillip Graves Sur.
Drlg. water well.

Shell Pet. Corp.'s No. 2 McFadden, 11,250 ft. from NE cor. along N line, 2,310 ft. S of N line at R/A.
Coring sandy shale 5,047 ft.

Welder Oil & Gas Co.'s No. 1 Patrick, 3,230 ft. SW, 1,925 ft. NW of most easterly cor. of 1,736-ac. tract, Felipe Dem-mit Sur.
Abd. 6,000 ft.

Walker County

Bradley et al's No. 1 Trinity Lumber Co., N 45 deg., E 1,205 ft., N 45 deg., W 400 ft. from S cor. of J. C. Harrison 320-ac. Sur.
Moving in derrick.

Wharton County

Pure Oil Co.'s No. 1 Paige, 1,397 ft. NE and 467 ft. SE from W cor. of 159.27-ac. lease, James Pirie Sur.
T.D. 7,212 ft.; twisted off bit at 7,213 ft.; fishing.

Sterling Oil & Ref. Co.'s No. 1 Frank Janik Sr., 1,859 ft. from N line, 467 ft. W from SE cor. of Janik tract, Johathas Scott Sur.
T.D. 8,667 ft.; 5-in. csg. at 7,831 ft.; P.B. to 7,875 ft.; perforated liner from 7,832-47 ft.

Texas Co.'s No. 1-C Pierce Est., 12,225 ft. W along S line of the W. M. Pettus Sur., 3,400 ft. N in the John Caldwell League.
Drlg. sand and shale at 7,183 ft.

SOUTH LOUISIANA

Acadia Parish

Superior Oil Co.'s No. 1 Adam Smith, 324 ft. S, 35 deg. 35 min. E from NE cor. of 38.93-ac. tract, Sec. 47-7s-1e.
Coring shale 7,812 ft.; (corrected).

Beauregard Parish

Richardson & Martin's No. 1 Southwest Lbr. Co.
Location.

Calcasieu Parish

Fred Oil Co.'s No. 2 Faizt, 262 ft. E and 8 ft. S of NW cor. SE¼ Sec. 26-8s-10w.
S.D. 4,025 ft.

Lahay & Lambert et al's No. 1 Landry, 1,369 ft. southwesterly from NW cor., 3,600 ft. southwesterly from NE cor. of NW¼ of SE¼ of Sec. 23-11s-10w.
Spudded 23 ft. and S.D.

Wheeler Oil Corp.'s No. 1 School Lot, 1,703 ft. E. 1,325 ft. N of SW cor. Sec. 16-9s-7w.
S.D. 7,210 ft.

Cameron Parish

Magnolia Pet. Co.'s No. 1 J. B. Broussard, 330 ft. E and S, out of NW cor. of the SW¼ of SE¼ of Sec. 13-12s-9w.
5-in. csg. at 9,499 ft.; perforated csg. 9,366-78 ft.; tested 49 stands of salt water; P.B. and perforated csg. from 9,239-50 ft.; tested salt water; P.B. to 8,040 ft.; well blew out making estimated 35,000,000 ft. of gas and 7,000 ft of S.W.

Pan American Prod. Co. No. 1 Lutcher-Moore, 17,090 ft. W and 4,208 ft. N of SE cor. Sec. 32-14s-11w.
Drlg. shale 2,010 ft.

Steinberger Pet. Co.'s No. 1 Drew, 330 ft. out of NW cor. NE¼ of Sec. 26-10s-11w.
Location.

Evangeline Parish

I. E. Ladue's No. 4 Vidrine, Sec. 24-3-2.
S.D. 1,635 ft.

Sparks-Mitchell and Jacobson's No. 1 Vidrine, 1,114 ft. S, 1,060 ft. W of NE cor. Sec. 47-4s-2e.
S.D. 1,635 ft.

East Feliciana Parish

Thompson Creek Oil Co.'s No. 1 Fannie Noland, 2,600 ft. E and 1,580 ft. N of SW cor. Sec. 70.
S.D. 1,589 ft.

Iberia Parish

Jefferson Lake Oil Co.'s No. 1 State, Twp. 12s-5e.
T.D. 8,655 ft.; drill stem stuck.

Meade Oil Co.'s No. 1 Hamilton, near town of Loze, in the NW cor. of parish, Sec. 38-12-5.
S.D. 200 ft.

Texas Co.'s No. 1 State Fausse Point.
D.S. stuck at 6,400 ft.; S.D.

Jefferson Davis Parish

J. K. Lewis' No. 1 Lockmoore, 150 ft. N and W of SE cor. NW¼ of Sec. 32-7-6. S.D. 6,025 ft.

Shell Pet. Corp.'s No. 1 Lacassan, 990 ft. N, 1,980 ft. E of SW cor. of Sec. 30-11s-5w. Coring shale 8,220 ft.

LaFourche Parish

Coastal Oil Co.'s No. 2 Constantine, 1,476 ft. N, 809 ft. E of SW cor. Sec. 36-21-22e. Location.

St. Bernard Parish

Emerald Pet. Corp.'s "Shell Beach Properties" No. 1, on S edge of Bayou Louis Sec. 31-13s-15e. T.D. 7,235 ft.; hole caved in while S.D. at 5,480 ft.; cemented 7-in. csg. at 5,480 ft.

St. Mary Parish

Herton Oil Co.'s No. 1 Roame, 1,336 ft. N, 638 ft. E, SW cor. of Lot 13, Sec. 38-13s-9e. T.D. 7,231 ft.; showed 6 ohms from 6,822-31 ft.; 7-in. csg. 7,460 ft.; W.O.C.

St. Martin Parish

Texas Co.'s No. 1 State Lake, 5,180 ft. E 350 ft. N of SW cor. of Sec. 10-10s-9. Made D.S. test from 6,908-17 ft.; tested S.W.; T.D. 6,917 ft.

S. C. Yingling et al No. 1 State, 2,957 ft. N and 1,116 ft. W of SE cor. of RE cor. of sec. 13-9s-8w. Location.

S. C. Yingling No. 2 State, 3,066 ft. N and 2,003 ft. W of SE cor. of sec. 13-9s-8w. Location.

Plaquemines Parish

Lo-Tex Expltn. Co.'s No. 1 Hero Plantation. Sec. 72-14s-24e. S.D. 5,343 ft.; waiting on orders.

Southern Sulphur Co.'s No. 1 Manhattan Fruit Co. S.D. 3,189 ft.

St. Tammy Parish

Danciger O. & R. Co.'s No. 1 Holdsworth, C NW¼ SE¼ Sec. 26-8s-14e Drlg. shale and lime 5,077 ft.

Vermillion Parish

Delcambre & Shelton's No. 1 Adam Delcambre, south degrees E, 825 ft. from most northerly cor. of irregular Sec. 63-17-5. S.D. 2,704 ft.

Vernon Parish

Llano Cooperative Oil Co. No. 3 Llano Del Rio, 1,185 ft. S and 1,000 ft. W of NE cor. of sec. 7-1n-9w. Drlg. shale 1,700 ft.

Terrebonne Parish

Shell Pet. Corp.'s No. 1 Realty Operators. 2,000 ft. due S of E cor. of triangular Sec. 76, Sur. 103, 17s-17e. T.D. 5,536 ft.; making up drill pipe.

E. C. TEXAS WILDCATS

Week Ending December 14

Camp Hill Area—Anderson County

Sun Oil Co. No. 1 Carl Rosson, W. T. Davis Survey, 330 ft. from W line and 630 ft. from N line of tract. Location.

Sun Oil Co. No. 2 Carl Rosson, W. T. Davis Survey, 330 ft. from E line and 466 ft. from N line of tract. Location.

Long Lake Area—Anderson County

Tide Water-Seaboard No. 4 Shaw & Cern. Daniel Parker Sur., 993 ft. W of No. 3. Location.

Tide Water Oil Co. et al's No. 3 Shaw & Cern, 933 ft. W of No. 1, D. Parker Sur. Cored 5,315-30 ft.; recovered 1 ft. shale, 6½ ft. black shale, 6-in. ash, 2 ft. sand with light stain oil; 5,330-46 ft. 9½ ft. sand; 5,346-45 ft. 4½ ft. sand, stain oil; 7-inch 5,341 ft., W.O.C.; T.D. 5,345 ft.

Standard Oil Co. of Kansas' No. 1 Robinson & Homba, 2,300 ft. from W and midway of N and S lines of lease, J. Adams Survey. T.D. 5,347 ft. hard sand; top sand 5,345-47 ft.; 7-inch 5,338 ft.

Angelina County

Lee-Tex Oil Co. No. 2 Southern Pine Lumber Co. (Guissler), 800 ft. N of No. 1 Guissler, 600 ft. from W line of B. J. Thompson Sur. Began 12-10-35; 10-inch 20 ft. W.O.C.

Morris et al's No. 1 Prayear, cen. 165-ac. tract, Thos. Hank Sur., 7 miles E of Huntington. Drlg. 500 ft.

Pioneer Exploration Co. No. 2 W. D. Ivey, S. Scarborough Sur., 300 ft. N of No. 1 N. Huntington. Derrick.

Schafer Co. No. 1 Phelps, 400 ft. from S and 150 ft. from W line of 320-ac. tract of J. J. Anselmo Sur., 1 mile NE of Diboll. S.D. 1,501 ft., shale.

Bowie County

B. J. Russell's No. 1 O. A. Hall, 2,350 ft. W line and 1,100 ft. S line of R. F. Peters Sur., SW cor. of county. Completed.

Tex-Ark. Oil Co.'s No. 1 Hamilton Estate. 600 ft. E and 350 ft. N lines, J. Milan Jur., 4 miles S of Red River. S.D. 1,121 ft.

Woodley & Bentley's No. 1 Lumpkin, 330 ft. out of NE cor. of 245-ac. tract, J McDermot Sur., 1 mile SW of Dalby Springs. S.D. 120 ft.

Cherokee County

L. O. McMillan et al No. 1 S. W. Lang, Robt. Linnard Survey, 414 ft. from S line and 263 ft. from W line, of 30.96-ac. tract, 1½ miles SE T. J. Wood No. 1. New Birmingham Dev. Co. discovery well. Moving in rig.

Rowe-Hynes et al No. 1 H. L. Walker, 330 ft. from N and E of 51-ac. tract, A. Gibson Sur., 1½ miles NW of Mt. Selman. Top Pecan gap, 3,910 ft.; drlg. 4,740 ft., shale.

Collin County

Port Bolivar O. & R. Co.'s No. 1-A Dunning, 24 ft. W of No. 1, Wm. Creager Sur., 2 miles SE of Van Alystin. Elev. 722 ft.; S.D. 3,865 ft.

Port Bolivar O. & R. Co.'s No. 1 J. Shirley, 330 ft. N and W of 210-ac. tract J. Sorrell Sur., 4 miles SE of Anna. Elev. 684 ft.; S.D. 1,963 ft.; skidded 60 ft. north.

Ellis County

Beasley O. & G. Co.'s Inc.'s No. 1 E Roller, 1,000 ft. from NW and 1,500 ft from SW line of Sur. S.D. 160 ft.

Falls County

G. W. Langley No. 1 A. Springfield, P. Herrington Survey, 330 ft. from N line, and 330 ft. from W line of 60-ac. tract, NE Bremond. Rig up.

Fannin County

Paul Garrett No. 1 G. D. Galloway, 300 ft. from S line and 295 ft. from W line of tract and Wm. M. Rice Sur., 1½ miles S of Leonard. S.D. 15 ft.

Warner Moore et al's No. 2 Hancock Est., 1,200 ft. N and 500 ft. E of L. M. Baldock Sur., 1 mile E of Trenton. Location.

Warner Moore et al's No. 1 Hancock, 400 ft. from W and 150 ft. N lines, Sec. 16, L. M. Baldock Sur., ½ mile S of Trenton. Top sand 645 ft.; S.D. 689 ft.

R. Franklin Smith-Allen's No. 1 Argo, center of 16½-ac. tract in J. G. Swisher Sur. T.D. 1,628 ft., sandy shale; S.D.

Freestone County

J. J. Leighton et al's No. 1 G. Cochran, 330 ft. from N and W of 100-ac. tract, D. Bullock Sur., 6 miles S of League. Completed.

Grayson County

Olson Drlg. Co.'s No. 1 Southwestern Life Ins. Co., center of 160-ac. tract and J. C. Jamison Sur., 6 miles NW of Denison. Elev. 767 ft.; drlg. 4,057 ft.

Port Bolivar O. & R. Co.'s No. 1 C. Taylor, 330 ft. S and W of 1,542-ac. tract, Fitzhugh Sur., 2¼ miles SE of Gunter. Drlg. 3,552 ft.

Henderson County

C. & G. Oil Co.'s No. 1 Sterrett, 350 ft. from S and 200 ft. from W of Isham Marshall Sur. Salt water sand 1,060-70 ft.; S.D. 1,109 ft.

H. M. Wilson's No. 1 fee, 970 varas S of NE cor. of 943-ac. tract, 6 miles N of Malakoff. S.D. 1,744 ft.

Hill County

Roger Lacey et al's No. 1 J. H. Atchison Est., 330 ft. S and E of E. Carroll Sur., 5 miles W of Hillsboro. S.D. 2,210 ft.

Kaufman County

Murry & Emerson's No. 1 G. W. Martin, 1,660 ft. from W and 20 ft. from N of 140-ac. tract, from W. L. C. Butler Sur., 2 miles NE of Kemp. Top Austin 1,940-74 ft.; S.D. 2,402 ft.; sidetracking tools.

Lamar County

Bruce Bros. No. 1 Chas. Price, 300 ft from S of most southerly SW cor. and 1,000 ft. from W line of Wm. Nelson Sur., 10 miles NE of Paris, 1 mile W of Trout. S.D. 336 ft.

L. W. Dennis' No. 1 W. C. Clark, 800 ft from E and 1,800 ft. from N line of G H. Hall Sur., 2 miles NE of Reno. Derrick.

L. W. Dennis, trustee's No. 1 Mrs. E. Lawrence, 300 ft. from N and 1,160 ft. from W of T. B. Roundtree Sur., 2 miles NE of Blossom. Derrick.

Geo. Greer et al's No. 1 Calvin Marshall. 921 ft. from S and 2,292 ft. from E line of survey, 7 miles NE of Blossom in M.E.P.R.R. Sur. Location.

Texas-Gulf Pet. Co.'s No. 1 A. L. Darnell. 1,490 varas from S and 1,950 varas from W line of H. L. Williams Sur., 4 miles NE of Paris. S.D. 2,630 ft.

North Texas Synd., Eric T. Bradley, tr.'s No. 1 Wright, Alfred Moore Sur., 1,600 ft. S and 4,300 ft. from E line of Sur. T.D. 2,702 ft.; S.D.

Limestone County

D. Crawford No. 2 Mary Ward, 400 ft. NE of No. 1, Pedro Varela Sur. Skidding rig from No. 1.

D. Crawford's No. 1 Mary Ward, 150 ft out of NE cor. 28-ac. tract, P. Varella Sur. S.D. 3,001 ft.; putting on pump.

McLennan County

T. Cunningham's No. 1 M. G. McKee, 940 ft. from S and 2,640 ft. W of 640-ac. tract, M. Snell Sur., near Bruceville. Derrick.

Riley & Barrow's No. 1 Hortsman, V. C. Walters Sur., 500 ft. from most northerly N line, 500 ft. from most westerly E line, 500-ac. tract, 1¼ miles S McGregor. S.D. 475 ft.

Nacogdoches County

Rosser Bros. & Jackson's No. 1 Mattby, 330 ft. out of NE cor. 60-ac. tract, Pedro J. Esparza Sur., 5 miles S of Nacogdoches. S.D. 565 ft.

Navarro County

McCullough et al's No. 1 C. Berry, 330 ft from SE cor. of 35-ac. tract, 1 mile W of Dawson, William Moss Sur. S.D. 1,500 ft.

E. M. Thomason No. 1 Estes Bros., 3,960 ft. from SW and 7,260 ft. from most northerly NW line of Wm. Gilbert Sur., 1 mile E of Roane. 10-inch 40 ft.; S.D.

E. M. Thomason's No. 1 T. P. Shivers, 1,500 ft. from W. and 600 ft. N. of 60 ac. tract, W. R. Bowen Sur., 2 miles S. of Corsicana T.D. 2,187 ft.; S.D.

Rains County

Allen & McClung's No. 1 Giles, T. Cunningham Sur., Abst. 143, 330 ft. from W line and 200 ft. from N line of 105-ac. Giles tract, 5 mi. SW of Emory. Derrick.

Allen & McClung's No. 1 Ida Bullard N. Brantely Sur., 1,300 ft. from W line and 200 ft. from N line of 35-ac. tract, 4 mi SW of Emory. Rig up.

Allen & McClung & Collard's No. 1 S. F. Cain, 1,350 ft. N and 1,550 ft. W line of J. Harges Sur., 1 mile NW of Emory. Location.

Red River County

Abercrombie & Harrison's No. 1 Southern Pine Lumber Co., 1,148 ft. from S and 1,356 ft. from E, Joshia Davidson Sur., 12 miles NW of Clarksville. Location.

Don F. Cleary's No. 1 C. S. Mowery, 150 ft. from S and 3,200 ft. W of most easterly E line of J. Bowerman Sur., 10 miles N of Clarksville. Completed.

Joe Dinger et al's No. 2 Morris, John Guest Sur., approx. 175 ft. NW of No. 1 Morris, 1 mile S Detroit. T.D. 825 ft.; S.D.

A. H. Chew et al's No. 1 J. F. Brooks, 900 ft. N and 600 ft. of W line of 320-ac. tract, B. Gooch Sur., ½ mile S of Bagswell. Derrick.

Jelner's No. 1 D. Rust, C. C. Wilborn Sur., 334 ft. N and 354 ft. W of most southerly SE cor. of Sur., just south of Avery. Derrick.

Rockwall County

Dodd et al's No. 1 M. F. Lofland, 2,250 ft. from N and 3,250 ft. from E line of 202-ac. tract, W. H. Beird Sur., 2½ miles SE of Rockwall. S.D. 192 ft.

Rusk County

Agey Drlg. Co.'s No. 1 John McWilliams Est., 330 ft. out of NW cor. of 240-ac. tract in J. C. De Lavina Sur. Completed.

J. W. Shipman et al's No. 1 Citizens Natl. Bank, NE cor. of 125-ac. tract, J. J. T'Barbo Sur., 4 miles NE of Henderson. T.D. 3,000 ft.; fishing.

Smith County

Frank D. Staples No. 1 Luther Hale, T. C. William Survey, 1,460 ft. from E line and 192 ft. from S line of tract, 3½ mi. NW Arp. Began 12-12-35; drlg. 50 ft.

Titus County

Howze, Thompson & Peveto No. 1, C. M. Carr, North M. V. Delgado Survey, 2,060 ft. from easterly E line and 1,838 ft. from northerly N line of Sur., 1½ miles E of Talco. Pits.

S. Rotondi's No. 1 Lillianstun, 1,200 ft. E from NW cor. of J. Bodt Sur. and 330 ft. N, but in W. H. Crawford Sur., 5 miles NE of Talco. Elev. 301 ft.; derrick.

Van Zandt County

Byers et al No. 1 Mrs. E. S. Williams, 330 ft. out of SE cor. of 92-ac. tract in D. Smith Sur., 1½ miles NW Wills Point. Completed.

J. H. Gilliam et al's No. 1 E. S. Martin, 185 ft. most southerly SE line, and 208 ft. from most easterly SW line of tract, James Hamilton Sur., 3 miles NE of Wills Point. Location.

S. W. TEXAS WILDCATS

Week Ending December 14

Atascosa County

R. C. Lee's No. 1 Atascosa Trust, 160 ft S line, 300 ft. E line, 152-ac. lease, J T. Russell Sur. No. 1,222. W.O. water.

Robert McIntyre No. 1 S. A. Joint Stock Land Bank, 1,104 ft. SW line, 3,700 ft. SE line, J. D. Woodruff Sur. 246 ft. Drlg. 1,027 ft.

Bandera County

Plateau Oil Co.'s No. 1 Garrison, G.C.&S. F. Sur. No. 506, 1,500 ft. from W and 2,970 ft. from N lines of survey. Fishing 5,365 ft.

Bee County

Geo. W. Church's No. 1 Hearn, 2,000 ft. S No. 1 Wood. Drlg. 4,312 ft.

Geo. M. Church's No. 1 Ray, 360 ft. E line, 330 ft. N line, C 40-ac. tract, Anna Burk Sur. T.D. 692 feet, S.D., drlg. water well.

LaSalle Pet. Corp. No. 1 Ray, 360 ft. E line, 330 ft. N line, 40-ac. tract, Anna Burk Sur. Drlg. 363 feet.

G. M. Richardson No. 1 Mengers, center 500-ac. tract, Ryan estate, William Allen Sur. Moving in material.

D. C. Smith's No. 1 Robertson, 150 ft. N and W lines, T. B. Barton Sur., Abst. 114. Sand 3,025-59 ft.; jetting with gas; making approx. 50 per cent oil.

Rogers Oil & Gas Co. No. 1 Goree, 370 ft. E line, 1,336 ft. S line, Blk. 20, Tarver Henslee Subd., Yoward ranch. Drlg. 3,109 feet.

Bexar County

A. J. Byrne's No. 1 Newman, 330 ft., S and W lines lease, L. Munoz Survey No. 66. Location.

Jas. B. Cunningham's No. 1 L. F. Ridder, 950 ft. S of Nelson Road, 1,300 ft. from E line, Block 5,196, Sur. No. 58. T.D. 860 ft.; standing.

Dorine Oil Co.'s No. 1 Haywood, 1,000 ft. E No. 2 Tudyk, Cardenas Sur. T.D. 332 feet, dry and abandoned.

J. Dupree No. 1 Coffey, Rodriguez Sur. Running csg. 1,050 ft., blowing gas.

Morgan & Magna's No. 1 Kirkwood, Desaque Sur., 9 miles SW of San Antonio. Location.

Bart Mowinkle's No. 1 Kotsur, 434 ft. N line, 150 ft. W line, Loringville Sur. Drlg. 760 ft.

H. B. Starkey's No. 1 McCloskey, 150 ft. W line, 1,525 ft. N line lease, Desague Sur. T.D. 780 ft.; washing.

Fred Thorman's No. 1 Sahn, 330 ft. E line, 600 ft. S line of tract, Sur. No. 3. Spudded in; waiting on rotary rig.

Brooks County

California Co. No. 1 B. Garcia, 465 ft. N and W lines lease, B. Garcia tract, Salinas Sur. T.D. 117 feet, reset csg.

Caldwell County

P. M. Armstrong's No. 1 Dunlap, 300 ft. W Bob Rose No. 1 Pierce, Dunlap area. Moving in material.

J. J. Elam's No. 1 Brown, 450 ft. SE and SW lines of lease, Souvereign Sur. Rigging up.

Ogden & Reed No. 1 Lackey, 100 ft. SE line, 150 ft. NE line, 193-ac. tract, Damon Sur. Location.

W. H. Jennings' No. 1 McMahan, 250 ft. SE and SW lines, 68-ac. tr. Drlg. 112 ft.

Cameron County

Joseph Anderson's No. 1 Browne, 330 ft. N line, Blk. 379, San Benito Subd., Espirito Santo grant, 3 miles N Rio Hondo. Standing 5,195 ft.

Kingwood & Daniels' No. 1 Port Isabel. Share 29. Spudded in; S.D.

Dewitt County

Reginald F. Baurke's No. 1 W. C. Steinman Est., 937 ft. from N and S lines, Uriah Blue 1-3 League. To resume drilling; T.D. 2,412 ft.

Universal Oil, Gas & Mining Co. No. 1 Schuebel, 330 ft. from S and W lines of tract, Fitzgerald grant. No report.

Duval County

J. H. Chandler's No. 2 Rita Pena, Share 4, Mesquite grant. Drlg. 2,023 ft.

Chas. Daubert No. 1 Kreis, 2,600 ft. N line, 2,700 ft. E line, Sur. 518. Drlg. water well.

Howard Pet. Co.'s No. 1 Ruiz, sec. 4. Location.

Magnolia Pet. Co.'s No. 1 Milano Land & Garden Co., 330 ft. S and W lines, Sur. 55. Drlg. 3,430 ft.

Magnolia Pet. Co.'s No. 1 Worden-Duval, 330 ft. N and W lines, Sec. 153. Drlg. 3,065 ft.

Plymouth Oil Co.'s No. 1 Cuellar, 330 ft. NW and NE lines, Sur. 125. S.D.; T.D. 3,128 ft.

Rogers & Rogers No. 1 Sutherland, 330 ft. S and W lines, Sec. 120. Drlg. 2,250 ft.

Santa Clara Oil Co.'s (Atkins & O'Neil) No. 1-A James F. Welder Heirs, 330 ft. SW cor. 640-ac. tr. lying W of sec. 525, in sec. 103.
T.D. 1,000 ft., reworking water well.
Trinity Drillers, Inc.'s No. 1 Sweden ranch (Driscoll-Sevier), 330 ft. N and E lines, Sec. 68, Santa Rosalie grant.
Drlg. 1,810 ft.

Edwards County

Paul Teas' No. 1 Stewart, C SE¼, Sec. 2, G.C.&S.F. Sur.
Location.

Frio County

W. D. Bacon's No. 1 Burns, 2,500 ft. S and W line, Thomas Clifton Sur.
S.D. 2,330 ft.
F. L. Thompson No. 1 La Batt, 2,085 ft. W line, 265 ft. N line, Uphus Sur. 169.
Location.

Goliad County

John W. Greer's No. 1 Pettus, Sebastiana Vela Sur.
Location.
Hendricks et al's No. 1 Gillette, 330 ft. of NW and SW lines of tract, G. Gomez Sur.
Location.
Keystone Royalty Co.'s No. 2 M. Woods, 330 ft. S and E lines, SE¼ 160-ac. tract, Sec. 13, Josefa Rios Sur.
Fishing 6,702 ft.
Potter et al No. 1 Lutenbacher, 330 ft. N and W lines, Blk. 35, Goliad townsite.
Rigged up.
Thompson Drlg. Co.'s No. 1 Hays Taylor estate, 900 ft. SE line, 2,400 ft. W cor. 791-ac. tract, Smith Sur.
S.D. 5,301 ft.

Gonzales County

Tull et al No. 1 Boska, 800 ft. S and E lines lease, B. McClure Sur.
Location.

Guadalupe County

Paul Armstrong and J. E. Clark No. 1 Brodnoux, 150 ft. S and E lines, 36-ac. tract, W. P. King Sur.
Drlg. 162 ft.
Jim Harper's No. 1 Flucker, 220 ft. NE line, 150 ft. NW line of tract, Smith Sur. No. 15.
T.D. 2,200 ft.; S.D.
R. C. Robbins' No. 1 Manford, 1,200 ft. E line, 750 ft. S line, 100-ac. tr., Hodges ¾ league.
T.D. 1,160 ft.; S.D.

Hidalgo County

Gulf States Oil Co.'s No. 2 J. C. Engleman, 400 ft. S and E lines, Lot 3, Blk. 70, Las Mestanas grant.
Drlg. hard shale 5,793 ft.
Gulf States Oil Co.'s No. 1 Delta Orchards, 580 ft. from N line, 400 ft. W line, Lot 2, Blk. 73, Las Westanas Grant.
Set surface csg. 700 ft.; W.O.C.
Kingwood Oil Co.'s No. 2 Osca Daskom, 723 ft. N line, 1,805 ft. E line, Blk. 30, Porc. 45, J. of Reynosa.
Moving in material.
Maxwell's No. 1 Hidalgo Water Dist. No. 2, Lot 11, Blk. 20, Alamo Land & Sugar Co. Subd., Alamo tract, 10 miles SW McAllen.
Drlg. 593 ft.
Sloan et al's No. 1 Brock & Showers, 350 ft. S and W lines, Lot 9, Blk. 16, Por. 80
T.D. 6,003 ft.; P.B. 4,660 ft.; tested salt water; S.D. for orders.
Dayle L. Smith Oil Co.'s No. 1 Fairbanks & Young, Blk. 44, Por. 46, Jurisdiction of Reynosa.
Drlg. gummy shale 705 ft.

Jim Hogg County

French Oil Corp.'s No. 1 E. Rodriguez, Share M-1, partition, Las Cuevitas grant
Location.
S. L. Miller Oil Co.'s No. 1 Yeager, 150 ft. E line, 477 ft. S line, Blk. 6, Sur. 20.
Milling, T.D. 3,444 ft.
P. H. Neilson, trustee's No. 1 de la Garza, 660 ft. E line, 600 ft. S line, Blk. 293, Pippin Subd., Randado grant.
Set csg. 610 ft.; W.O.C.

Jim Wells County

Smith & Son No. 1 McGill, 660 ft. S No. 1 Dilworth.
P.B. 2,325 ft.; W.O.C.

Kendall County

H. W. Martin's No. 2 Edwin Houston, I.T.&N. Sur. 598.
Location.

Kerr County

Auld and Evans' No. 1 Heffner, 660 ft. N line, 330 ft. E line Sec. 13, B.S.&F. Sur. Abnd. old hole, skidded over, drlg. 300 ft.

Kleberg County

John Bartlett's No. 1 Anton Deitz, SE¼ SE¼ Sec. 48, K.T.&I. Subd.
T.D. 1,650 ft.; S.D.
Fidelity Oil Co.'s No. 1 Fiato, 150 ft. S and E lines, Blk. 14, Sec. 40, K.T.&I. Sur.
Location.
Fidelity Exp. Co.'s No. 1 Sam Michalk et al, 330 ft. from N line and 775 ft. from E line, Blk. 37, Sec. 5; 5 miles SF Kingsville.
T.D. 3,705 ft.; set csg.; W.O.C.
Gordon et al No. 1 Dietz, NE cor. Blk. 10, Sec. 56.
Drlg. 3,742 ft.

LaSalle County

Bier & Witherspoon's No. 1 LaSalle Co., 1,320 ft. S and W lines, Sec. 19, Bland & Nelson Subd., O'Conner ranch.
Abandoned.
Roy Shipman's No. 1 Coleman, 330 ft. SW cor. Blk. 15, Sur. 514.
Drlg. 2,185 ft.

Lee County

J. Spivey's No. 1 First National Bank, 300 ft. S and E lines, 646-ac. tract, Mack Sur.
Location.

Live Oak County

E. H. Buchner's No. 1 McNeill, 300 ft. of SW cor. of 40-ac. tract, Blk. 8, McNeill Subd.
Location.
California Co.'s No. 1 Gillett Community Lands, 2,540 ft. NW line, 450 ft. S line lease, Refugio County School Lands, Sur. No. 7.
Dry and abandoned, 3,933 ft.
Earl Calloway's No. 1 Lyne, 895 ft. of W line, 330 ft. of N line, SW¼ SW¼ of M. M. Lyne Sur.
Drlg. 4,365 ft.
Ogden & Reed's No. 1 Reed, 330 ft. SW and NW lines, I.&G.N. R.R. Sur. No. 5.
Rigging up.
Santa Clara Oil Co.'s (Atkins & O'Neil) No. 1 Corbett, sec. 2, R. H. Corbett Sur.
S.D. for water.
L. W. Steiren No. 1 Smith, T. B. Reese Sur.
Location.
Wheelock & Collins' No. 1 Kirby, 1,650 ft. S line, 5,795 ft. E line, 317-ac. tract, Thos. B. Reese Sur.
Pettus sand 3,044-46 ft.; no show; drlg.
T.D. 4,000 ft.; dry and abandoned.

McMullen County

Aransas Oil Co.'s No. 1 Reed, 330 ft. E line, 1,320 ft. S line, Spicer Sur.
T.D. 1,680 ft.; S.D.
J. F. Camp. No. 1 Byrn estate, Benjamin Odem Sur.
T.D. 967 ft., S.D. for rains.
Darby Pet. Co. No. 2-B Hagist, 330 ft. S and E lines, SE¼ NW¼, Sur. 181.
Drlg. 1,853 ft.
C. O. Garney's No. 1 Hagist, 330 ft. N and W lines, SE¼, Sur. 6.
Location.
Reliance Oil & Royalty Co.'s No. 1 Shiner, 330 ft. NE cor. Sec. 29, C. C. Shumway Subvd.
Drlg. 1,452 ft.
Stewart et al's No. 1 G. Lowe, 2,000 ft. W line, 2,400 ft. S line, Geo. Bright Sur. No. 21.
T.D. 2,249 ft.; S.D.
S. Teichman No. 1 Henry, Torres Sur. No. 20.
Standing 374 ft.
Texio Oil Co.'s No. 1 Ellen Atkinson, C NW¼ NE¼ Sur. 96.
T.D. 3,020 ft.; dry and abandoned.

Medina County

F. Brown's No. 1 Brucks, 900 ft. W line, 660 ft. S line, Brucks tract, John Ward Sur. No. 18.
Standing 560 ft.
Frank Brown's No. 2 Winn, 600 ft. W line, 300 ft. N line, Ward Sur.
Spudded in; S.D.
Joe Dupree's No. 1 Brucks, 404 ft. N line, 165 ft. E line, Castro Sur. No. 348.
S.D. 750 ft.
W. C. Campbell's No. 1 McMenemy, 160 ft. S and W lines, Sur. 33.
Drlg. 1,307 ft.
Gates & Hills' No. 3-B Odem, Castro Sur. No. 174.
Standing; T.D. 465 ft.
Letro Oil Corp.'s No. 1 E. B. Forrest, 1,928 ft. from N line, 1,908 ft. from E line of 640-ac. tract Blk. 69.
Running csg. 800 ft.

Nueces County

Bluff Pet. Co.'s No. 1 Bluntzer, 330 ft. SW and SE lines, NE 1,007-ac. tract, Sec. 6, Casa Blanco grant.
T.D. 4,219 ft.; S.D. for fuel.
T. Graham No. 1 Donnigan, 40-ac. tract, Sec. 7.
Rigging up.
A. E. Masterson's No. 1 Eschberger, 330 ft. S and W lines, N½ NE¼ Sec. 37, Pauls Subd., Driscoll ranch.
Set sur. csg. 564 ft.; drlg. plugs.
La Jita Corp.'s No. 1 King, C SE¼ SW¼ Sec. 22.
Perforated 5,046-60 ft.; testing.
H. A. Meyer's No. 1 Harney, 550 ft. W line, 225 ft. S line, 3,200-ac. tract.
Location.

San Patricio County

George E. Smith's No. 1 Britton, 330 ft. N and W lines, Lot 8, Sec. 6.
T.D. 4,905 ft., show oil; W.O. casing.
Stanolind Oil & Gas Co.'s No. 1 Alamo Iron Works, 1,320 ft. N line, 330 ft. E line, Blk. 17, Fitzsimmons league.
Coring 3,513 ft.

Starr County

Ash & Tackett's No. 1 Margo, 150 ft. S and E lines, Blk. 4, Share 3-B, Por. 70, Sand 376-78 ft.; standing; oil in hole to 40 ft. of surface; some gas.
J. H. Clopton's No. 2 Bass, 2,460 ft. E line, Por. 87, 17,409 ft. W of Highway No. 4, Por. 87.
Drlg. 650 ft.
John Clopton No. 3 Roos & Bennett, 6,-253 ft. S. M.P. Ry., 3,000 ft. E line, Share 1-A, Por. 92, Jurisdiction of Camargo.
Drlg. shale 1,772 ft.
Cook-Maris Arnold's No. 1 S.C.C.C., 220 ft. N line, 25 ft. E line, Lot 24, Por. 89.
Coring 3,583 ft.
Coreta Oil Co. No. 1 Haden et al, Share 47, Por. 80, Jurisdiction of Camargo.
Drlg. water well.
McCurry & Yates' No. 1 S.C.C.C., 150 ft. W line, 510 ft. N line, Blk. 58, Porc. 89.
Location.
McCurry & Yates' No. 2 S.C.C.C., 150 ft. E line, 510 ft. N line, Blk. 58, Porc. 89.
Location.
Pedernal Oil Co.'s No. 1 Hicks et al, 187 ft. from NW line, 318 ft. from NE line of Blk. 6, Pedernal Grant.
T.D. 2,210 ft.; S.D.
Hiram M. Reed's No. 1 S.C.C.C., 888 ft. W line, 150 ft. N line, Blk. 66, Jefferies-Lambeth Subd., Porc. 89.
Perforated 2,511-22 ft. and 2,628-30 ft., flowed salt water in heads with gas.

Webb County

Austin & Vernon's No. 1 Jeffries, 150 ft. NE line, 1,170 ft. SE line, Blk. 13, Sur 1,453.
Drlg. 207 ft.
California Co. and Mills Bennett Prod. Co. No. 1 Billings, 1,500 ft. E line, 2,600 ft. S line, Sur. 45.
Set sur. csg. 40 ft.; W.O.C.
Clopton & Doffing's No. 1 Slator, center Blk. 29, Borrego grant.
Fishing 2,625 ft.
O. W. Killam's No. 1 Ortiz, 200 ft. SE line, 3,350 ft. S.W. road, Porc. 17.
Sidetracking 1,851 ft.
Magnolia Pet. Co.'s No. 1 Garcia-Arriba, 330 ft. S and E lines, Blk. 3, Albercas grant.
Coring 4,352 ft.
J. E. Neal No. 1 Laurel Bros., 1,320 ft. S and E lines, Sur. 119.
Drlg. 4,272 ft.
Payne & Martinez's No. 1 Ferry, 150 ft. NE and NW lines, Sur. 177.
Location.
Arthur H. Wray's No. 1 Geo. Stuempge, Share 1, Brewster pasture, Galan grant
Rebldg. derrick pulled in while fishing.
S. S. & B. Oil Co.'s No. 6 Lone Star Co., 7,700 ft. NE line, 330 ft. SE line, Por. 13.
T.D. 659 ft., lignite, show oil and gas.
S.D. for orders.

Willacy County

Kingwood Oil Co.'s No. 1 Santa Rosa, Inc., 160 ft. from E line, 637 ft. from S line of Sec. 30, Blk. 16, Share 44, San Juan de Carricitas grant.
P.B. 4,900 ft.; to perforate 4,858-87 ft.

Zavalla County

Buttram Pet. Co. No. 1 White Cotton, 2,-340 ft. W line, 330 ft. N line, A.B.&M. Sur. No. 1.
Derrick.
Leona Oil Co. and Witherspoon Oil Co. No. 1 George West, 3,665 ft. N line, 330 ft. E line, C. Bustillo Sur. No. 1.
Location.

Zapata County

Murt Cullinan's No. 1 Gutierrez, Blk. 4, Share 3, Fansler Partition, Comitas Grant.
Drlg. 717 ft.
J. J. O'Hern's No. 1 Raymond, 330 ft. NW line, 330 ft. NE line. Blk. 5, Share E. Por. 27.
Fishing 2,220 ft.

S. W. TEXAS PROVEN

Week Ending December 14

Caesar—Bee County

Caesar Oil Co.'s No. 6 R. E. Miller, N offset to Commodor's No. 4 Grissom.
Location.
Luling O. & G. Co. No. 2-B Hudman, 660 ft. SE No. 1-B, 496.4-ac. tract, Chas. Baker Sur.
Top sand 3,081 ft.; T.D. 3,085 ft.; S.D.; W.O. csg.
Sun Oil Co.'s No. 1 Barroum, 990 ft. N line, 330 ft. E line lease.
Clearing location.

Dirks—Bee County

Devonian Oil Co. No. 1 Young, 660 ft. W Home No. 8 Bassinger, 330 ft. E line, M. O. O'Brien Sur.
Location.
Illinois Pet. Co. No. 1 Imogene Hall, T. J. Butler Sur.
Swabbing; sand 3-912-25 ft.
Illinois Pet. Co.'s No. 2 Rapp, 330 ft. N line, 66-ac. tract, 660 ft. W No. 1 Rapp, C. A. Dugat Sur.
Location.
Illinois Pet. Co.'s No. 3 Rapp, 330 ft. N line 66-ac. tract, 660 ft. W No. 2 Rapp, C. A. Dugat Sur.
Location.
Sun Oil Co.'s No. 4 Page, 660 ft. NE No. 3 Page, 330 ft. SE line lease, Young Sur.
Comp.; 92.5 bbls. in 9 hours on ½-in. choke; T.P. 375 lbs.; C.P. 275 lbs.
Texas Co. No. 12 Young, 660 ft. W No. 6, G. W. Young Sur.
Comp.; 19 bbls. per hour on ¼-in. choke; T.D. 3,865 ft.
Texas Co. No. 13 Young, 580 ft. NE No. 11, T. J. Butler Sur., Abst. No. 411.
Top sand 3,916 ft.; swabbed, no show.

Ray—Bee County

Duncan & Perkins No. 2-B Campbell, W. B. Blanchard Sur.
Drlg. 2,512 ft.
Simms Oil Co. No. 7 Ray, 660 ft. S No. 5, W. B. Blanchard Sur.
Drlg. 3,050 ft.
Simms Oil Co. No. 8 Ray, 660 ft. S No. 5 Ray, W. B. Blanchard Sur., Abst. 133.
Drlg. 1,870 ft.
Simms Oil Co.'s No. 1-B Campbell, 150 ft. S and E lines, Lot 19, Bucher Subd., W. B. Blanchard Sur.
Location.
Sun Oil Co.'s No. 3 Ray, 660 ft. W No. 2 Ray.
Rigged up.
West & Tucker No. 1 Ray, 660 ft. N Hill No. 2-A Ray.
Comp. 20 bbls. per hour on ¼-in. choke; W.P. 250 lbs.; sand 3,946-56 ft.
R. J. Worthington's No. 1 Chestnut, 330 ft. NW cor. 40-ac. tract, B. O. Hadley Sur.
Spudded in; S.D.

Rutledge—Bee County

Werth Oil Co.'s No. 4 Rutledge, 660 ft. S No. 3 Rutledge, Hadley Sur.
Location.

Tuleta—Bee County

Highland Oil Co.'s No. 4 Campbell, 40-ac. tract, B.&B. Sur.
Spudded in.

Gas Ridge—Bexar County

American Gas Co. No. 5 Oliver, Rodriguez Sur.
Drlg. 3,010 ft.

Von Ormy—Bexar County

R. Ingersoll No. 1 Mann, 180 ft. S line, 200 ft. E line of Survey.
Drlg. 321 ft.
Morosis No. 1 Cole, Rolen League, Sur. 46.
T.D. 698 ft.; bailing 2 bbls. daily.
B. Shadrock's No. 5 Barragan, 150 ft. S and E lines, tract.
Rigging up.
F. H. Shaver's No. 1 Bitter, 150 ft. W line, 2,900 ft. NW line, tract, Baerrera Survey.
Comp.; 2 bbls. per day; T.D. 865 ft.
F. H. Shaver No. 2 Bitter, 300 ft. NE No. 1, Baerrera Sur.
Moving in material.
Jacob Wolff No. 1 Jurz, 150 ft. Medina River, 500 ft. N line, tract, Rolen Sur.
Sand 586-96 ft.; comp. est. at 2 bbls. per day; T.D. 722 ft.

Salt Flat—Caldwell County

Dawn Oil Co. No. 1 Tiller, 37½-ac. tract.
Location.

Government Wells Pool—Duval County

Government Wells Oil Corp. No. 19 Lundell, NW¼ NE¼, Sur. 48.
Dry and abandoned 2,275 ft.
Magnolia Pet. Co.'s No. 9 Johnson, center ½, E½, Sur. 44.
T.D. 2,313 ft.; set csg. W.O.C.

Hoffman—Duval County

Argo Oil & Royalty Co. No. 1 Smith-Corkill, N½, Sur. 61.
Location.

Kohler—Duval County

California Co. No. 2 Grury, 990 ft. N and E lines, Sur. 157.
T.D. 2,617 ft.; S.D. for orders.

Loma Novia—Duval County

Bridwell Oil Co. No. 4 B.C.C., NW¼, S½, Sur. 76.
Drlg. 2,312 ft.
Bridwell Oil Co. No. 2 Pennia, Blk. 7, Sur. 78.
Comp. 20 bbls. per hour; T.D. 2,580 ft.
Bridwell Oil Co. No. 3 Pennia, Blk. 7, Sur. 78.
Set sur. csg.; W.O.C.
Bridwell Oil Co. No. 2 Pennia, Blk. 7, Sur. 78.
Drlg. 1,060 ft.
Buchanan & Blanco Oil Co.'s No. 1-B Ruiz, 185 ft. N line, 1,650 ft. E line, Sur. 73.
Location.
Rodney DeLange No. 4 B.C.C., SE¼, SE¼, Sur. 76.
Coring 2,498 ft.
Rodney DeLange No. 3 B.C.C., 330 ft. N and W lines, SE¼ SE¼, Sur. 76.
Sand 2,665-86 ft.; comp.; 13 bbls. per hour on ½-in. choke; T.D. 2,688 ft.
Rodney DeLange No. 3 DuVon, SW¼ NE¼ Sur. 76.
T.D. 2,672 ft.; comp.; 100 bbls. per day on pump.
Rodney DeLange's No. 4 C. W. Hahl, Sur. 78.
T.D. 2,679 ft.; comp.; 34 bbls. per hour on ½-inch choke.
Duval Oil Corp. No. 3 Hahl, 330 ft. N line, 255 ft. E line, Sur. 78.
Top sand 2,624 ft.; set csg.; W.O.C.
Gilcrease Oil Co. No. 2 McLean, SW¼, Sur. 62.
Location.
Gravis & Gilcrease Oil Co. No. 2 Byland, 330 ft. S and W lines, Blk. 3, Sur. 7-8.
Comp.; 32 bbls. per hour, sand 2,572-96 ft.
Gravis & Gilcrease Oil Co. No. 3 Byland, Blk. 4, Sur. 78.
Rigging up.
C. Hamill (J. I. Newton) No. 1-D Hahl, 330 ft. N and E lines, N½, NW¼ Sur. 76.
Set csg. 2,629 ft.; W.O.C.
Hamill, Smith & Ogden No. 1-D Hahl, 330 ft. N and E lines, NW¼, Sur. 76.
T.D. 2,629 ft.; W.O.C.
Hamill, Smith & Ogden, No. 7 Hahl, 330 ft. S line, 2,310 ft. E line, SE¼, Sur. 63.
Comp.; no gauge; T.D. 2,350 ft.
Hamill, Smith & Ogden No. 30 Hubbard, 330 ft. SE cor. NE¼ SW¼ Sur. 77.
Drlg. shale 2,462 ft.
Hamill, Smith & Ogden's No. 13 Hubbard, 330 ft. N and E lines, NE¼, SE¼, Sec. 77.
Derrick.
Hamill, Smith & Ogden's No. 14 Hubbard,

330 ft. S and E lines, NE¼, SE¼, Sec. 77.
Location.

Hamill, Smith & Ogden's No. 32 Hubbard. 330 ft. SE cor. SE¼ SW¼ Sur. 77.
Location.

Highland Oil Co. No. 5 Hubbard, 2,970 ft. N line, 330 ft. W line, W½ Sur. 72.
Rigging up.
Location.

Highland Oil Co. No. 1 B.C.C., W½ SW¼ Sur. 76.
Comp.; 25 bbls. per hour on ¼-inch choke; sand 2,588-2,613 ft.

Humble O. & R. Co. No. 6-C Welder, 2,110 ft. W line, 2,363 ft. S line, sec. 554.
Location.

Humble O. & R. Co. No. 5-C Welder, 1,320 ft. S and W lines lease, Sur. 554.
Sand 2,702-93 ft.; sandy shale 2,702-07 ft.; running screen.

Humble O. & R. Co. No. 5-A Hubbard. 330 ft. N and E lines, Sur. 84.
Spudding in.

Humble O. & R. Co. No. 1-B Hubbard, E½, Sur. 72.
Location.

Humble O. & R. Co. No. 4 M. C. Hubbard. 330 ft. W line, 1,650 ft. S line, 320-ac. tract, Sec. 84.
Comp.; 16 bbls. per hour on 1-in. choke; flowing with gas injection; T.D. 2,837 ft.

Montour Prod. Co. (Lipscomb & Daubert) No. 3 Hubbard, 330 ft. S and E lines. S½, NE¼, Sur. 75.
Location.

Magnolia Pet. Co. No. 13 Hahl, Sur. 67.
Location.

Magnolia Pet. Co. No. 6 Hahl, Sur. 67.
Comp. 10 bbls. per hour on ¾-in. choke; T.D. 2,650 ft.

Magnolia Pet. Co. No. 13 Hahl, 640-ac. tract, Sur. 67.
Location.

Reynosa Oil Co. No. 2-B Mary Davison, 990 ft. S and E lines, Sur. 114.
Location.

Reynosa Oil Co. No. 4 M. Davison, Sur. 114.
Location.

Reynosa Oil Co. No. 1 Jackson, 330 ft. N and E lines, N½, SW¼, Sur. 114.
Sand 2,551-75 ft.; comp.; 75 bbls. per day.

Rocan Oil Co. No. 5 M. C. Hubbard, SW¼, Sec. 84.
Location.

Rosen Oil Co. No. 4 Hubbard, E½, Sur. 71.
T.D. 2,790 ft.; drlg. plugs.

Russ Pet. Co. No. 2 B.C.C., SW¼ SW¼, Sur. 76.
Location.

Russ Pet. Co.'s No. 1 Duke, 330 ft. N and W lines, 40-ac. tract, Sec. 64, J. Poitevent Sur.
Location.

Shell Pet. Corp. No. 2 Hahl, 330 ft. S and E lines lease, Sur. 75.
Coring 2,534 ft.

Shell Pet. Corp. No. 16 Hubbard, 974 ft. W line, 330 ft. N line, E½, Sur. 77.
Comp., swabbing 2 bbls. per hour; T.D. 2,732 ft.

Shell Pet. Corp. No. 17 Hubbard, 1,619 ft. W line, 330 ft. N line, E½, Sur. 77.
Set sur. csg. 31 ft.; W.O.C.

Shell Pet. Corp. No. 18 Hubbard, 330 ft. N and E lines, E½ Sur. 77.
Derrick.

Shell Pet. Corp. No. 19 Hubbard, E½ Sur. 77.
Set csg. 2,760 ft.; W.O.C.

Texas Co. No. 2 Hugo Wendt, 330 ft. N line, 1,593 ft. W line, 458-ac. tract, Guffey Sur. 68.
Comp.; 31.4 bbls. per hour on ¾-in. choke; sand 2,612-29 ft.

Texas Co. No. 12 Vela, 4,290 ft. E line, 330 ft. S line, Sur. 42.
Set csg. 2,616 ft.; W.O.C.

Texas Co. No. 13 Vela, S½, Sur. 42.
Sand 2,578-91 ft.; gas, coring lower sand.

Texas Co. No. 14 Vela, S½, Sur. 42.
Location.

Texas No. No. 13 Wendt, 330 ft. S line, 3,630 ft. W line, 458-ac. tract, Sec. 68.
T.D. 2,720 ft.; pulled tubing; W.O. orders.

Texas Co. No. 14 Wendt, 330 ft. S line, 4,290 ft. W line, 458-ac. tract, Sec. 68.
Location.

Texas Co. No. 15 Wendt, 330 ft. S line, 4,950 ft. W line, 458-ac. tract, Sec. 68.
Location.

Sarnosa—Duval County

Magnolia Pet. Co. No. 1 D.C.R.C., Sur. 573.
Swabbing and cleaning 2,415 ft.

Seven Sisters—Duval County

Atlantic Oil Prod. Co. No. 4-B Welder, 330 ft. S and W lines, S½ SE¼, Sur. 385.
Drlg. 1,617 ft.

Atlantic Oil Prod. Co. No. 5-A Welder, 990 ft. W line, 330 ft. N line, NE¼ Sur. 385.
Drlg. 267 ft.

Buchanan & Blanco Oil Co. No. 5 Wood-Welder, 1,650 ft. N line, 330 ft. E line, 82.1-ac. tract, sec. 385.
Drlg. 1,011 ft.

Buchanan & Blanco Oil Co. No. 6 Wood-Welder, 660 ft. S No. 2, 330 ft. W line, 82.1-ac. tract, Sec. 385.
Comp.; 21 bbls. per hour on ¾-in. choke; T.P. 270 lbs.; C.P. 550 lbs.; T.D. 2,475 ft.

Daube & Westheimer's No. 1-Z Campos. 330 ft. S and W lines, Sur. 324.
Chernosky sand 2,202-16 ft.; comp.; 27 bbls. per hour on ¾-in. choke; C.P. 150 lbs.

Diamond Half Oil Co. No. 1 R. Serna, 330 ft. N and W lines, N½ NE¼, Sur. 384.
Sand 2,202-20 ft.; set csg.; W.O.C.

Henderson & Harvey's No. 1 Wood-Welder, 330 ft. S and W lines, NE¼, SE¼, Sur. 381.
Sand 2,415-31.5 ft.; comp.; 21 bbls. per hour on ¼-in. choke.

Humble O. & R. Co. No. 2-B Serna, 330 ft. S and E lines, Sur. 384.
D.S.T. 2,199-2,207 ft.; ¾-in. choke, top and bottom, 900 ft. oil, 10 minutes; W.P. 65 lbs.; set csg.; W.O.C.

Mid-Continent Pet. Corp. No. 4 Serna, 990 ft. E line, 2,080 ft. N line, Sur. 382.
Drlg. 1,150 ft.

Navarro Oil Co. No. 1 J. F. Welder, 330 ft. E line, 2,970 ft. N line, Sur. 383.
Location.

Santa Clara Oil Co. (Atkins & O'Neil), No. 7 Wood-Welder, 990 ft. N line, 1,320 ft. E line, NW¼, Sur. 385.
Spudded in.

Santa Clara Oil Co. (Atkins & O'Neil) No. 11 Wood-Welder, 990 ft. S line, 1,650 ft. E line, NW¼ Sur. 385.
Sand 2,485-94 ft.; comp.; est. 36 bbls. per hour on ¼-in. choke.

Shell Pet. Corp. No. 2 Welder, 990 ft. N line, 330 ft. E line, W½, SW¼, Sur. 385.
Spudded in.

Pearsall—Frio County

Amerada Pet. Co. No. 1 Michael, 1,400 ft. N line, 466 ft. W line, Alexander Lynch Sur. 321.
Drlg. 3,507 ft.

Hords Creek—Goliad County

M. I. Richardson's No. 1 Kaufan, 330 ft. NW and SW lines, 40-ac. tr.
Location.

Sun Oil Co.'s No. 1 Kaufman, 990 ft. SE line, 330 ft. SW line lease, Trevino Sur.
Location.

North Pettus—Goliad County

Jane Oil Co.'s No. 5 Smith, 990 ft. SW line, 330 ft. SE line, B.&B. Sur. No. 35.
Sand 3,696-99 ft.; comp.; 32 bbls. per hour; T.D. 3,699 ft.; C.P. and T.P. 250 lbs.

Southwest Darst Creek—Guadalupe

Doody Oil Co.'s No. 2 Katy Lay, 150 ft. N line, 343 ft. E No. 1, J. K. Davis Sur.
T.D. 2,555 ft., Eagleford; swabbing.

Stegal & Gallagher's No. 2 Lay, 20-ac. tr., Davis Sur.
Drlg. 2,310 ft.

Mercedes—Hidalgo County

Union Sulphur Co. No. 1 American Rio Grande L. & I. Co., 400 ft. N and E lines, Lot 229, Blk. 59.
Rigging up to rework.

Union Sulphur Co.'s No. 5 American Rio Grande L. & I. Co., 230 ft. N line, 350 ft. W line, Tract 2,082.
Fishing 7,473 ft.

Samfordyce—Hidalgo County

J. H. Anderson's No. 1 Guerra, 233 ft. N line, 285 ft. W line, Tract 254, Por. 39.
Location.

Weekly Oil Corp.'s (Cortez) No. 2-C Smith, 230 ft. from N line, 690 ft. from W line of NE 40 acres of Tract B-3, Porcion 41.
Location.

Weekly Oil Corp.'s (Cortez) No. 3-C Smith, 230 ft. from N line, 1,150 ft. from W line of NE 40 acres of Tract B-3, Porcion 41.
Location.

Ralph E. Fair, Inc.'s (Kingwood) No. 4 Guerra, 165 ft. S line, 1,150 ft. E line. Share 12, Por. 41.
Location.

Harrison, Davis & Bishop's No. 1 Guerra, 230 ft. S line, 616 ft. W line, S 40-ac., Tract 12, Por. 41.
M.L.M.

Harrison-Davis-Bishop's No. 7 Guerra, 230 ft. N line, 623 ft. E line, 40-ac. tract. Tract 12, Por. 41.
Cored sand 1,526-29 ft., slight oil show; drlg. 1,852 ft.

Harrison-Davis-Bishop's No. 8 Guerra, 230 ft. N line, 1,083 ft. E line, 40-ac. tract, Tract 12, Por. 41.
Location.

Harrison-Davis-Bishop's No. 9 Guerra, 230 ft. N and W lines, 40-ac. tract, Tract 13, Por. 41.
Location.

W. F. Lacey's No. 1 Lula George, 75 ft. S and W lines, 5-ac. tract, Tract 13, Por. 41.
Location.

W. F. Lacey's No. 2 Lula George, 75 ft. S and W lines, 10-ac. tract, Tract 13, Por. 41.
Location.

W. F. Lacey's No. 3 Lula George, 75 ft. S line, 550 ft. W line, 10-ac. tract, Tract 13, Por. 41.
Location.

Navarro Oil Co. No. 1 Francisco Guerra. 230 ft. S and E lines, 20-ac. tract, Tract 12, Por. 41.
Set sur. csg. 207 ft.; W.O.C.

Weekly Oil Corp. No. 3 F. Guerra, 230 ft. N and E lines, 20-ac. lease, Tract 13, Porc. 41.
Location.

Kingsville—Kleberg County

Fidelity & Culbertson Exploration Co.'s No. 2 Henry, Lot 2, Blk. 49.
Location.

Fort Merrill—Live Oak County

Slick-Urschel Oil Co.'s No. 1 Watson & Shipp, 330 ft. NE line, 990 ft. SE line lease, offset Mills Bennett's No. 1 discovery well.
Drlg. 3,250 ft.

McNeill—Live Oak County

Benco Oil Corp.'s No. 1 E. Mahoney, 155 ft. from NW line of J. H. Harvey tract, 3,100 ft. SW of highway in Mark Killelly Sur.
S.D. 78 ft.

Luray Oil Co.'s No. 1 Little, NE offset, Whittington's No. 2 Little, M. M. Shipp Sur.
Top Yegua 5,147 ft.; show gas; S.D. for orders.

J. O. Whittington's No. 4 Little, 990 ft. S and E lines, Shipp Sur.
Location.

Calliham—McMullen County

Luray Oil Co. No. 1 Garner, 150 ft. S Frio River, Jas. Garner Tract.
Location.

Jacob Pool—McMullen County

Loma Oil Co. No. 43-A Jacob, 2,080 ft. S, 1,540 ft. W line, 640-ac. lease, Jacob Sur. 9.
S.D. for fuel oil; T.D. 630 ft.

Chas. Weist's No. 1 Lark, 150 ft. S and W lines, NW¼, Sec. 114.
Sand 1,032-27 ft.; drlg. plugs.

Baldwin—Nueces County

Houston Oil Co.'s No. 4 Baldwin, 330 ft. N and E lines 425-ac. tract, B.S.&F. Sur. No. 165.
Location.

Magnolia Pet. Co. No. 5 Baldwin, 1,005-ac. tract, Sur. 165.
Location.

Clara Driscoll—Nueces County

Santa Clara Oil Co. (Atkins & O'Neil) No. 2 Driscoll, 4,456.2 ft. N line, 1,650 ft. E line, Wm. Gamble Sur.
Drlg. 1,306 ft.

Saxet Heights—Nueces County

Benson Drlg. Co. No. 1 Phillips, 3.6-ac. tract.
Drlg. 527 ft.

J. K. Culton No. 1 Margaret Whelan, 230 ft. S line, 330 ft. E line, 22-ac. tract, Villareal Sur.
D.S.T. 4,077-83 ft., showed 4,080 ft. oil in 17 minutes; 130 lbs. W.P.; set csg.; W.O.C.

Richardson Oil Co. No. 1 Krus, 230 ft. E line, 225 ft. S line, 6-ac. tract, Villareal Sur.
Set sur. csg. 508 ft.; W.O.C.

Saxet—Nueces County

Conservative Oil Co.'s No. 2 K. Hutchins, 330 ft. S line, 430 ft. W line, Blk. 29.
S.D. 1,044 ft.

Tom Graham No. 1 Flato, 330 ft. S and E lines, 30-ac. tract, Blk. 14, Sheppard Farm Lots.
Location.

Tom Graham's No. 1 Sam Kaler, 150 ft. S and E lines, 10-ac. tract, Villareal Sur.
Location.

Houston Oil Co.'s No. 5 Walton, 330 ft. NE line, 542.28-ac. tr., Villareal Survey.
Location.

Houston Oil Co.'s No. 7 Morgan, 330 ft. N and W lines, 494.8-ac. tr., Sec. 7.
Location.

Houston Oil Co.'s No. 8 Morgan, 330 ft. N line, 967 ft. W line, 494.8-ac. tr., sec. 7.
Location.

Houston Oil Co.'s No. 3 Harrell, 330 ft. N and E lines, Block 19, Sheppard Farm Lots.
Coring 4,874 ft.

Houston Oil Co.'s No. 3 Hunter, 330 ft. S and W lines, 159.37-ac. tr., Sur. 586.
Location.

Houston Oil Co.'s No. 3 Isensee, 330 ft. S and E lines, 40-ac. tract.
Sand 4,862-65 ft.; comp.; est. 8 bbls. per hour; fluid 70 per cent salt water on ¼-in. choke; C.P. 600 lbs.

Magnolia Pet. Co.'s No. 2 Sanders, 330 ft SW cor. 110-ac. tract, Sec. 165, B.S.&F. Sur.
Derrick.

Republic Natural Gas Co. No. 12 Dunn, 360 ft. N line, 670 ft. NE No. 11, Villareal Sur.
Spudded in.

Southern Minerals Corp. No. 2-A Isensee, 658 ft. E line, 116 ft. S line, 17-ac. tract, C. Land Sur., Abst. 975.
Sand 4,385-4,403 ft.; set csg. 4,388 ft.; W.O.C.

Southern Minerals Corp. No. 3-A Isensee, 17-ac. tract, C. Land Sur., Abst. 975.
Drlg. 3,715 ft.

Southern Minerals Corp.'s No. 3 Sally Page, 330 ft. S and E lines, 75-ac. tract, Sur. 556.
Sand 4,855-70 ft.; set csg. 4,858 ft.; W.O.C.

Texon Royalty Co.'s No. 1 Taggert, 330 ft. N and E lines, Block 5, Sur. 401.
Drlg. 5,461 ft.

Texan Royalty & Lucey No. 2 Isensee, 660 ft. W, 140 ft. S lines, Blk. 21, Sheppard farm lots.
Set csg. 4,394 ft.; W.O.C.; D.S.T. at 4,400 ft.; showed mud, no oil and 300 lbs. W.P.

Plymouth—San Patricio County

Conroe Drlg. Co.'s No. 3 D. Welder, sec. 47.
Reaming down hard shale; T.D. 5,875 ft.

Conroe Drlg. Co. No. 1-G Welder, 466 ft. E line, 10 ft. S line, Sec. 47.
Drlg. hard lime and shale 4,716 ft.

Heep Oil Corp. No. 11-E Welder, sec. 46.
Rigging up.

Heep Oil Corp. No. 12-E Welder, 933 ft. W, 933 ft. S, No. 9-E.
Comp.; no gauge; sand 5,646-50 ft.; T.P. 650 lbs.; C.P. 750 lbs.

Magnolia Pet. Co. No. 5 Corpus Christi Bank, 1,349.7-ac. tract, H. Hunter Sur.
Rigging up.

Plymouth Oil Co.'s No. 23-C Welder, 933 ft. N, No. 20-C, 300 ft. Chiltipin Cr.
Comp.; no gauge, T.D. 5,620 ft.; T.P. 1,700 lbs.; C.P. 1,600 lbs.

Plymouth Oil Co.'s No. 24-C Welder, 936 ft. W line, 5,893 ft. S line, Sec. 71.
Drlg. shale 4,328 ft.

Plymouth Oil Co. No. 25-C Welder, 3,016 ft. S line, 1,100 ft. W line, Sec. 71.
Set sur. csg. 364 ft.; W.O.C.

Plymouth Oil Co. No. 26-C Welder, 1,363.7 ft. W line, 3,911.7 ft. S line, sec. 71.
Rigging up.

Sun Oil Co. No. 3 Hunt, 466 ft. N and E lines lease, Blk. 34, Lot 5.
Drlg. 5,207 ft.

Sun Oil Co. No. 1 Edgar, 330 ft. N and W lines, Blk. 1, Sec. 34.
Rigging up.

Sun Oil Co. No. 2 Edgar, 330 ft. S and W lines, Blk. 1, sec. 34.
Location.

Barbacoas—Starr County

T. K. Irwin et al's No. 1 S.C.C.C., 150 ft. S and W lines, Blk. 58, Por. 89.
Plugged back 2,320 ft.; standing.

Guerra—Starr County

Sun Oil Co. No. 8-B M. Guerra & Sons, 1,980 ft. N, 800 ft. W No. 6-B, Las Cueritas Sur.
Drlg. 1,837 ft.

Rio Grande City—Starr County

Fech Oil Co. No. 4 Frank Dayno, Blk. 4, Tract 77-A, Porc. 81.
Rigged up.

Samfordyce—Starr County

Phillips Pet. Co. No. 1 Garcia Land & Cattle Co., 330 ft. E line, 304 ft. S line lease, W½ Por. 100.
Drlg. 2,293 ft.

Porter & Pickens' No. 2-B Garcia Land & Cattle Co., 330 ft. N and W lines, 60-ac. tract, NW cor. Blk. 4, Por. 100.
Location.

Porter & Pickens No. 3-A Garcia Land & Cattle Co., on line between Blks. 4 and 5, Por. 100.
Drlg. 747 ft.

Porter & Pickens' No. 3-B Garcia Land & Cattle Co., 330 ft. W line, 914 ft. S line, 60-ac. tract, Blk. 5, Por. 100.
Location.

Skelly Oil Co.'s No. 6 Seabury, 319 ft. S line, 248 ft. E line, E 15-ac., NW 30-ac., S 263.8-ac., Tract 256, Por. 38, J. of Reynosa.
Location.

Skelly Oil Co.'s No. 8 Seabury, 319 ft. N line, 198 ft. W line, 12-ac. tract, Tract 256, Por. 38.
Location.

Skelly Oil Co.'s No. 10 Seabury, 440 ft. N line, 230 ft. E line, 24-ac. tract, Tract 256, Por. 38.
Location.

Skelly Oil Co. No. 11 Seabury, Tract 256, Por. 38.
Set sur. csg.; W.O.C. 217 ft.

Carolina-Texas—Webb County

Holland Reams No. 1 Webster, 150 ft. S and W lines, NW¼, NE¼, Sur. 684.
Location.

Lopez—Webb County

C. F. Lewis' No. 2 Lopez, 330 ft. N and W lines, Sur. 110.
Rigging up.

Mills Bennett Prod. Co. No. 3 Montemayor, 2,310 ft. W line, 2,042 ft. N line, Sur. 114.
Drlg. 1,832 ft.

Mills Bennett Prod. Co. No. 5-A Montemayor, 330 ft. N line, 1,650 ft. E line lease, Sur. 114.
Sand 2,166-77 ft.; set csg.; W.O.C.

Montour Prod. Co.'s No. 1 Coffey, 330 ft. W line, 2,691 ft. S line, 80-ac. tract, Sur. 111.
Drlg. 1,708 ft.

Mills Bennett Prod. Co.'s No. 1 A. Lopez, SW cor. tract, Share 13, Tract 111.
Location.

G. G. Mortimer's No. 1-A Montemayor, 330 ft. N and W lines lease, Sur. 114.
Location.

G. G. Mortimer No. 2 A. Montemayor, 990 ft. N line, 330 ft. W line, lease, Sur. 114.
Location.

G. G. Mortimer No. 4 M. Lopez, Sec. 73.
Sand 2,179-88 ft.; comp.; 14 bbls. per hour.

G. G. Mortimer No. 5 M. Lopez, 330 ft. S and E lines, lease, Sur. 114.
Drlg. 1,200 ft.

G. G. Mortimer No. 6 M. Lopez, 990 ft. E line, 330 ft. S line, lease, Sur. 114.
Location.

G. G. Mortimer No. 7 M. Lopez, 1,650 ft. E line, 330 ft. S line, lease, Sur. 114.
Location.

G. G. Mortimer No. 1 Maria Lopez, Sec. 112.
Drlg. 1,720 ft.

Sierra Oil & Royalties Co. (Nixon & Talbot) No. 2 Billings, Sur. 113.
Drlg. 415 ft.

Superior Oil Co. No. 2 Billings, Sur. 103.
Spudding in.

O'Hern—Webb County

O. W. Killam's No. 43 Brunt, Sur. 9, Foltz Subd., Arispe grant.
Drlg. 3,956 ft.

Magnolia Pet. Co.'s No. 21 Brennan-Benavides, center Blk. 152.
T.D. 2,303 ft.; dry and abandoned.
Magnolia Pet. Co. No. 22 Brennan-Benavides, center Blk. 260.
Location.
Magnolia Pet. Co. No. 23 Brennan-Benavides, cen. Blk. 395.
Comp.; 25 bbls. per hour on 5/16 inch choke; T.D. 2,790 ft.
Magnolia Pet. Co. No. 4-X Benavides, center Blk. 156, Hale Subd., Arispe grant.
Location.
J. J. O'Hern's No. 4 Brennan-Benavides, 347 ft. NW line, 313 ft. SW line, Blk. 190.
Location.
Texas Co. No. 3 Brennan-Benavides, center Blk. 394, Hale Subd., Arispe grant.
T.D. 2,798 ft.; testing.
Texla Oil Corp. No. 1 S. Benavides, center Blk. 294, Hale Subd.
Location.
Texla Oil Co. and Nash No. 1-B S. Benavides, center Blk. 393, Hale Subd.
T.D. 2,811 ft.; set csg.; W.O.C.

Escobas—Zapata County

S. R. C. Oil Corp.'s No. 16-A Trevino, 2,640 ft. E line, 330 ft. S line, Sur. 66.
Location.
Texas Co. No. 80 Whitehead, Cerrito Blanco grant.
Testing 1,208 ft.

Haynes—Zapata County

Clover Oil & Gas Co.-James P. Nash No. 3 Haynes, Haynes Subd., Comitas & Villa grant.
Completed.
L. C. Muckelroy No. 1 Haynes, Blk. 8, Comitas & Villa grants.
Rigging up.

LA.-ARK. WILDCATS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

Bienville Parish

DeSoto O. & G. Co. No. 1 C. R. Mower, 270 ft. S, 400 ft. W, NE cor. NW SW sec. 9-16-10.
Rigging up.

Bossier Parish

Ark.-La. Gas Co. No. 1-B Werner, 1,258 ft. N, 624 ft. E, SW cor. SE SE sec. 7-17-11.
Set 7-in. 4,027 ft.; T.D. 4,236 ft.
Bossier O. & G. Co. No. 3 Sherrill, 330 ft. N and W, SE cor. sec. 13-19-12.
S.D. 2,180 ft.
Geo. H. Bringhurst et al No. 1 Buckley, NE SW sec. 36-21-13.
Drlg. 375 ft.
Producers O. & G. Co. No. 1 Pettitt, 330 ft. S and W, NE cor. NW sec. 17-17-11.
Set 9⅝-in. 3,987 ft.; coring 4,231 ft.
Producers O. & G. Co. No. 1 Edwards, 660 ft. N and W, SE cor. sec. 27-18-11.
S.D. for fuel 360 ft.
Triangle Drlg. Co. No. 3 Skannal, Unit 50, S and W of C of NE.
Fishing for D.S. 2,714 ft.

Caddo Parish

J. Ed Bailey, tr., No. 1 Hartzo, NW cor. NE NW sec. 28-22-16.
S.D. 2,136 ft.
Bayou State Oil Co. No. 1 Brown, 150 ft. N, 300 ft. E, SW cor. NW SE sec. 28-22-15.
Set 10-in. 40 ft.; drlg. 195 ft.
John D. Bialock No. 2-A Seybert, 270 ft. N and 320 ft. E of C sec. 17-20-15.
S.D. 1,500 ft.
Falcon Oil Co. No. 1 Glassell, 1,615 ft. N, 994 ft. E, SW cor. sec. 26-20-15.
Drlg. 1,630 ft.
F. D. Hyde No. 1 Thigpen & Herold, 350 ft. S and E, C sec. 5-15-15.
S.D. 3,012 ft.
Max Brandt No. 1 Hughes, SW cor. NE NW sec. 15-20-15.
Tested 500,000 ft. gas; S.D.; W.O. 2,206 ft.
Shreveport Oil Corp. No. 7-B Muslow, 495 ft. N, 1,320 ft. E, SW cor. sec. 4-20-15.
W.O.S.R. 2,176 ft.
Shreveport Oil Corp. No. 2-G Muslow, 780 ft. S, 578 ft. W, NE cor. sec. 9-20-15.
W.O.S.R. 2,185 ft.
Ty-Stan, Inc., No. 1 Jolly, 460 ft. S and E, NW cor. SW SW sec. 22-22-15.
S.D. 2,820 ft.

Caldwell Parish

Caldwell Drlg. Co. No. 2 Gore, 280 ft. S, 600 ft. W, NE cor. SE sec. 30-12-3e.
T.A. 768 ft.
Critchett & Woods No. 1 Kyles, NE cor. SW NE sec. 18-11-3e.
Drlg. 610 ft.
G. W. Zeigan et al No. 1 La.-Central Lbr. Co., 175 ft. S and E, NW cor. SW SW sec. 25-13-3e.
Drlg. 1,285 ft.

Claiborne Parish

J. H. Lester No. 1 Robinson, 1,650 ft. N, 330 ft. E, SW cor. sec. 16-21-6.
Set 10-in. 160 ft.
E. T. Oakes No. 1 H. W. Patton Est., 660 ft. S and W, NE cor. sec. 1-20-5w.
S.D. 4,242 ft.
Ryan Oil Corp. No. 1 F. A. Gladney, 660 ft. S, 330 ft. E, NW cor. SE sec. 16-23-16, sec. 27-20-7.
Recmtd. surface csg. at 4,517 ft.
United Gas Public Service Co. No. 2 Durfett, 660 ft. N and 1,980 ft. E, SW cor. sec. 31-20-5.
Drlg. 4,237 ft.

De Soto Parish

E. B. Bird et al No. 1 J. H. Johns, 330 ft. N and W, C sec. 20-14-6.
Tested S.W. 2,622 ft., S.D.W.O.
Sam Goldman No. 1 G. R. Stell, 330 ft. S and W, NE cor. sec. 5-12-16.
Rigging up.
A. G. Halbach et al No. 1 Staton, 150 ft. N and E, SW cor. SE sec. 29-13-14.
Drlg. 200 ft.
Ed Saffold et al No. 1 Thigpen, sec. 33-13-13.
Dry and abd. 3,303 ft.
Union Pet. Co. No. 1 Hill, sec. 2-10-13.
Set 12½-in. 24 ft.; drlg. 990 ft.

Grant Parish

Alexander et al No. 1 Maxwell, sec. 9-9-1e.
Arranging to set csg. 1,538 ft.

Lincoln Parish

Caldwell Land & Timber Co. No. 1 J. K. Hammons, 330 ft. S and E, NW cor. SE SW sec. 30-18-1w.
Derrick.

Morehouse Parish

United Gas Public Service Co. No. 31 Crossett, 1,320 ft. S, 660 ft. E, SW cor. sec. 15-21-4e.
Comp.; 7,524,000 ft. gas, 2,174 ft.
Zeiger & Bacon No. 2 Crossett Lbr. Co., 3,870 ft. N, 505 ft. E, SE cor. SE SW of sec. 36, in sec. 41.
S.D. 50 ft.

Ouachita Parish

American Liberty Oil Co.'s No. 1 Golson, C NW Sec. 25-17-1e.
S.W. and abd. 5,180 ft.; old T.D. 5,381 ft.
Carbon Consolidated No. 2 Interstate, 330 ft. S, 660 ft. E, NW cor. SW sec. 32-19-4e.
Set 10-in. 198 ft.; set 7-in. 797 ft.
Interstate Nat. Gas Co. No. 39 fee, 660 ft. S and E, NW cor. NE NE.
Skidded over new hole 1,700 ft.
Interstate Nat. Gas Co. No. 41 fee, 809 ft. N, 274 ft. W, SE cor. SW sec. 19-19-4e.
Waiting on gauge, 2,200 ft.

Natchitoches Parish

Ab Jones' No. 1 Brown Lbr. Co., 400 ft. N, 330 ft. W, SE cor. Sec. 5-10-10.
S.D. 1,033 ft.
Union Petroleum Co.'s No. 1 DeBlieux, 1,395 ft. E, 150 ft. S, NW cor. Sec. 33-10-7.
Drlg. 2,815 ft.

Red River Parish

India Oil Co.'s No. 1 La. Pecan Co., 2,590 ft. W and 850 ft. N of SE cor. Sec. 27-13-11.
S.D. 550 ft.
J. S. Tuffree's No. 1 Wilkinson, 1,320 ft. S and W, NE cor. Sec. 11-12-11.
S.D. 1,395 ft.

Sabine Parish

B. S. & M. Oil Co.'s No. 1 Tatum, 330 ft. S and E, NW cor. NW SE Sec. 32-8-13.
P.B. to 1,590 ft. from 2,100 ft.
Helena O. & G. Co. No. 2-A Frost Lbr., 330 ft. N and W, SE cor. sec. 19-19-13.
Swbng. to test 1,735 ft.
H. H. Morris, tr., No. 2 Henderson, 330 ft. S and E, NW cor. SW NE sec. 29-9-13.
Comp.; pumping 30 bbls., 1,710 ft.
Geo. L. Pace's No. 4 DeSoto Corp., 330 ft. S and W NE cor. SE SE Sec. 27-10-13.
Bailing to test 1,895 ft.
Claude H. Smith No. 1 Whitney Corp., 330 ft. S, 990 ft. W, NE cor. sec. 19-10-13.
S.D. 750 ft.
Lee Whitehurst's No. 5 Frost Lbr. Ind., C NW SW SE Sec. 20-9-13.
Comp.; flowing 120 bbls., 1,657 ft.

Union Parish

United Carbon Co. No. 2 Stovall, 1,180 ft. S, 750 ft. E, C sec. 28-21-4e.
Set 12-in. 164 ft.

Webster Parish

Bennett & Eldred's No. 1 Fulbright, NE NE Sec. 1-18-10.
Dry and abd. 3,018 ft.
J. L. Edwards No. 1 Hooper, 330 ft. S and E, NW cor. SW sec. 8-17-9.
Set 12½-in. 80 ft.
Lyons & Myers No. 1 Leola Brantley, 330 ft. S and E, NW cor. SW SE sec. 1-21-9.
Set 7-in. 70 ft.; drlg. 160 ft.
Ohio Oil Co. No. 1 R. L. Holloway, 660 ft. S, 760 ft. W, C Sec. 23-21-10.
Rigging up.

Winn Parish

Parsons et al's No. 1 Tremont Lbr. Co. 660 ft. S, 330 ft. E NW cor. SW Sec. 10-12-2w.
S.D. 1,120 ft.

ARKANSAS

Arkansas County

Grand Prairie Realty Co.'s No. 2 Fischer 412 ft. S, 12 ft. W, NE cor. NW NW Sec. 6-6-4w.
Dry and abd. 1,628 ft.

Clark County

Boris Tripanoff, tr., No. 1 W. Gibbons, sec. 27-8-18.
Set 6-in. 41 ft.; drlg. 416 ft.

Columbia County

Magale & Elam No. 1 L. Garrett, 330 ft. N and W, SE cor. NE SW sec. 13-17-20.
Rigged up and W.O. fuel.
Southern States Gas Co.'s No. 1 Piney Woods Lbr. Co., 330 ft. N and E, SW cor. NE NW Sec. 10-20-22.
S.D. 1,924 ft.

Hempstead County

G. L. Glass, tr.'s No. 1 May B. O'Bier, Sec. 32-13-23.
Derrick.
F. W. Martin's No. 2 Lafferty, C NW Sec. 17-14-24.
Rigging up.

LaFayette County

Earl F. Fox' No. 2 Coleman Bros., NE NE Sec. 30-16-24.
Set 10-in. 135 ft.
Erwin & Leach No. 3 Bodcaw Lbr. Co., 330 ft. S and E, NW cor. sec. 20-16-13.
Moving in rig.
Kamon & Neely's No. 1 Cockran, NW cor. SE SW Sec. 26-19-25.
S.D. 4,450 ft.
Joe Modisett's No. 1 Red River Lbr. Co., C SW SW Sec. 21-19-14.
Fishing for D.S. 5,316 ft.
Riggs Bros.' No. 1 Dubose, SE cor. SW NW Sec. 35-15-24.
Set 6-in. 2,836 ft.; drlg. plug.
Transportation Pet. Co.'s No. 1 Cockran 300 ft. S and W, NE cor. SE Sec. 26-19-25.
Swbd. dry 3,362 ft.; coring 3,366 ft.

Miller County

E. J. Donohue's No. 4 Beck, 330 ft. N and W, SE cor. NE SE Sec. 33-15-26.
Coring 2,926 ft.
M. D. K. Fitzwater's No. 1 E. H. Beck, 150 ft. N and E, SW cor. NW SW Sec. 34-15-26.
W.O.S.R. 2,919 ft.
Haynes Prod. Co.'s No. 1 Embree estate, 330 ft. N and W, SE cor. SW SW sec. 9-20-28.
Drlg. 4,340 ft.
King Oil Corp.'s No. 1 G. W. Crank, SW NE Sec. 19-16-25.
Coring 3,560 ft.
M. H. S. Oil Co.'s No. 2 Beck, Sec. 34-15-26.
W.O.S.R. 2,928 ft.
L. H. Mahon et al's No. 1 Miller Land & Timber Co., SW cor. SE Sec. 29-15-27.
S.D. 150 ft.

Monroe County

J. R. Lockhart et al's No. 1 Rue Abramson, SE cor. SE SE sec. 19-1s-1w.
Arranging to resume drlg. 3,338 ft.

Nevada County

Sneed & O'Mara No. 1 Floyd Munin, C SW Sec. 16-14-22.
Set 12½-in. 42 ft.; drlg. 400 ft.

Ouachita County

Benedum & Trees' No. 1 H. Brighton, C NE SW Sec. 29-14-19.
Coring 5,005 ft.
Grigsby & Aarner No. 1 Burris, 330 ft. N and E, SW cor. NW NE Sec. 19-1s-19.
S.D.; W.O. 3,050 ft.
Snow-Black Pet. Co.'s No. 1 Bedford, 630 ft. N and 150 ft. E, SW cor. Sec. 32-11-18.
Derrick up on new hole.
W. B. Street, trustee's No. 1 Roth & Cartier, 330 ft. N and E, SW cor. SW NE
Set 6-in. 1,398 ft.; T.D. 1,404 ft.

Pulaski County

Base Line Oil Co. No. 1 Wilson, SW cor. NE SE sec. 28-1s-11w.
Set 8¼-in. 123 ft.

Sevier County

Pendleton & Vaughn's No. 1 Dierke, C NW NE Sec. 14-10-29.
Drlg. 605 ft.

Union County

J. J. Allen No. 1 Union Sawmill, 750 ft. W, 330 ft. N, C sec. 8-17-12.
Drlg. 2,350 ft.
Arkansas Southern Oil Co.'s No. 1 F. R. Laney, Sec. 30-19-16.
Installing larger rig 175 ft.
J. C. Buckbee, Tr.'s No. 1 Sloan, 330 ft. N and E, SW cor. SE NW.
W.O.S.R. 2,160 ft.
J. E. Crosbie, Inc., No. 2 Sullivant, 200 ft. N, 250 ft. E, SW cor. SE sec. 12-17-14.
10-in. 90 ft.; drlg. 2,950 ft.
Mrs. R. K. Jones et al's No. 1 Davis, 330 ft. N and W, SE cor. NW NW Sec. 35-16-14.
Arranging to test 3,297 ft.

MISSISSIPPI

Bolivar County

White & Jones' No. 1 Ballou, SE SE NW Sec. 17-24n-7w.
S.D. 1,614 ft.

Clarke County

L. Beckwith et al's No. 1 Long Bell Lbr Co., 528 ft. S, 125 ft. W of C Sec. 10-2n-16e.
T.A.; lack of funds.
Clarke County Oil Co.'s No. 1 Dora Butler, C SW SW Sec. 15-2n-16e.
Set 10-in. 62 ft.

Greene County

United Gas Pub. Ser. Co.'s No. 1 William Unit, 200 ft. N, 100 ft. W, C SW Sec. 6-15-5w.
Drlg. 2,550 ft.

Harrison County

Big Ridge Oil Co.'s No. 1 Hinzin, NE Sec 13-7s-10w.
S.D.; W.O. 1,100 ft.

Lafayette County

W. L. Stewart et al's No. 1 Russell, 1,320 ft. N, 1,720 ft. E, SW cor. Sec. 9-10s-1w
Drlg. 2,670 ft.

Lauderdale County

Bob Dalton's No. 1 Bounds, Sec. 34-7n-15e.
S.D.; W.O. 1,600 ft.

Warren County

H. W. Elliott et al's No. 2 R. L. Parker, 780 ft. E, 1,570 ft. S, NW cor. Sec. 14-14n-1e.
S.D.; W.O. 1,600 ft.

Washington County

Perkins & Dees' No. 1 Lee, 1,500 ft. E, 500 ft. N, SW cor. Sec. 33-15n-3w.
S.D. 2,175 ft.

Winston County

Jack Vale et al's No. 1 Moody, 713 ft. N, 667 ft. E, SW cor. NW SW Sec. 3-13n-14e.
Set 6-in. 2,212 ft.

ALABAMA

Houston County

Rice O. & G. Co.'s No. 1 Oakley Est., SE cor. NW SW Sec. 9-3n-29e.
S.D. 2,035 ft.

Lamar County

DeSoto O. & G. Corp.'s No. 1 Gardner, Sec. 22-15s-16w.
Drlg. 4,705 ft.

Mobile County

J. C. Prine's No. 1 C. H. M. King, N½ NE Sec. 4-1n-4w.
Drlg. 2,890 ft.

FLORIDA

Lake County

Oil Dev. Co. of Florida's No. 1 South Lake, SE SE Sec. 17-24s-25e.
Running 9⅝-in. csg. to 2,258 ft.

LA.-ARK. PROVEN

NORTH LOUISIANA

Caddo—Rodessa

Ark.-La. Gas Co. No. 7 Rodessa Oil & Land Co., 330 ft. S and W, NE cor. NW NE sec. 23-23-16.
Rigging up.
Ark.-La. Gas Co. No. 6 Rodessa Oil & Land Co., 400 ft. S, 200 ft. E, NW cor. SW NW sec. 23-23-16.
Drlg. 3,754 ft.
Ark.-La. Gas Co.'s No. 5 Rodessa O. & Land Co., 289 ft. S, 149 ft. E, C Sec. 23-23-16.
Drlg. 5,179 ft.
Bartex Pipe Line Co.'s No. 1 Norton Est., 660 ft. N and W, SE cor. NE Sec. 13-23-15.
Drlg. 4,285 ft.
Bartex Pipe Line Co.'s No. 1 Rodessa O. & Land Co., 660 ft. N and W, SE cor. NE SE Sec. 13-23-16.
Derrick.
Danciger & Hall's No. 1 Willis C Lot 5, Blk. 7, Sec. 23-23-16.
Set 13⅜-in. 294 ft.; drlg. 417 ft.
Haynes Prod. Co. No. 5 Sexton, 287 ft. S, 308 ft. W, NE cor. NW SE sec. 14-23-16.
Rig up.
Haynes Prod. Co. No. 5 Lawton, 1,980 ft. E, 968 ft. N, SW cor. sec. 14-23-16.
Set 12½-in. 258 ft.; drlg. 2,600 ft.
Haynes Prod. Co. No. 1 J. Caldwell, 660 ft. N, 2,079 ft. E, SW cor. sec. 13-23-16.
Drlg. 4,592 ft.
Haynes Prod. Co. No. 4 Lawton, 290 ft. S, 336 ft. W, NE cor. SE SW sec. 14-23-16.
Drlg. 5,280 ft.
Haynes Prod. Co.'s No. 1 Mattie Pitts, 290 ft. N, 264 ft. W, SE cor. NE NW sec. 14-23-16.
Drlg. 5,310 ft.
Haynes Prod. Co.'s No. 4 Sexton, 337 ft. N, 230 ft. W, SE cor. SW NE sec. 14-23-16.
Set 7-in. 5,992 ft.; T.D. 5,995 ft.
Lion Oil Ref. Co. No. 1 J. M. Wynn, 1,900 ft. N, 660 ft. E, SW cor. sec. 9-23-15.
Set 10¾-in. 2,121 ft.
M. H. Marr et al's No. 1 W. J. Hunter, 330 ft. S and E, NW cor. SW sec. 13-23-16.
Drlg. 5,600 ft.
McAlester Fuel Co.'s No. 1 Tyson, 250 ft. N, 150 ft. W, C Sec. 22-23-16.
Comp.; 195 bbls. per hr.; 6,026 ft.
Geo. Mannahan's No. 1 T. M. Comegys, 330 ft. N and W, SE cor. NE SE Sec. 10-23-16.
P.B. to 5,905 ft.; old T.D. 6,026 ft.
R. W. Norton No. 3-A Caddo Levee Board, C NE SW sec. 21-23-16.
Set 13⅜-in. 306 ft.; drlg. 3,212 ft.
R. W. Norton No. 2 Tyson heirs, 688 ft. S, 1,980 ft. W, NE cor. sec. 33-23-16.
Set 13⅜-in. 313 ft.; drlg. 3,855 ft.
R. W. Norton's No. 2-A Caddo Levee Board, 1,320 ft. S, 660 ft. E, C Sec. 21-23-16.
Comp.; 33 bbls. per hr.; ½-in. choke, 5,990 ft.
Pelican Oil & Gasoline Co. No. 8 Sexton, 650 ft. N, 990 ft. W, SE cor.
Rig up.
Pelican Oil & Gasoline Co. No. 7 Sexton, 330 ft. S and W, NE cor. NE SE sec. 14-23-16.
Drlg. 3,826 ft.
Pelican Oil & Gasoline Co. No. 5 Sexton, 330 ft. N and W, SE cor. SE NE sec. 14-23-16.
Drlg. 4,911 ft.
Pelican Oil & Gasoline Co.'s No. 4 Sexton, 330 ft. S and W, NE cor. SE NE sec. 14-23-16.
Drlg. 4,101 ft.
Pelican Oil & Gasoline Co.'s No. 6 Sexton, 330 ft. S and E, NW cor. NE SE sec. 14-23-16.
Drlg. 5,590 ft.

Pelican Oil & Gasoline Co.'s No. 3 Sexton, 330 ft. S and E, NW cor. SE NE Sec. 14-23-16.
Set 7-in. 5,939 ft.; T.D. 5,973 ft.
United Gas Public Service Co. No. 2 Bremer Unit, 2,173 ft. S, 660 ft. E, NW cor. sec. 22-23-16.
Set 13⅜-in. 425 ft.; drlg. 1,910 ft.
United Gas Public Service Co. No. 3 Bremer Unit, sec. 22-23-16, 328 ft. N, 565 ft. W of center.
Set 13⅜-in. 426 ft.; set 9⅝-in. 2,141 ft.
United Gas Public Service Co. No. 4 Bremer Unit, sec. 22-23-16, 289 ft. S, 140 ft. W. center.
Set 13⅜-in. 410 ft.; drlg. 1,499 ft.
United Gas Public Service Co. No. 1 Brewer, 2,000 ft. N, 730 ft. E, SW cor. sec. 21-23-16.
Set 13⅜-in. 412 ft.; drlg. 2,170 ft.
United Gas Public Service Co. No. 1 V. I. Miller, 990 ft. S and E, NW cor. sec. 14-23-16.
Set 13⅜-in. 409 ft.; set 9⅝-in. 2,200 ft.
United Gas Public Service Co. No. 1 W. A. Mitchell, 1,980 ft. N, 1,922 ft. W, SE cor. of frac. sec. 16-23-16.
Set 13⅜-in. 409 ft.; drlg. 799 ft.
United Gas Public Service Co. No. 4 Rodessa Oil & Land Co., 350 ft. N, 160 ft. E, C sec. 22-23-16.
Set 13⅜-in. 409 ft.; drlg. 1,534 ft.
United Gas Public Service Co. No. 5 Rodessa Oil & Land Co., 1,178 ft. S, 660 ft. E, NW cor. sec. 22-23-16.
Set 13⅜-in. 413 ft.; drlg. 1,345 ft.
United Gas Public Service Co. No. 6 Rodessa Oil & Land Co., 1,980 ft. W, 1,850 ft. N, SE cor. sec. 15-23-16.
Set 13⅜-in. 421 ft.; set 9⅝-in. 2,175 ft.
United Gas Public Service Co. No. 1 W. B. Spearman, 660 ft. N, 1,980 ft. E, SW cor. sec. 15-23-16.
Set 13⅜-in. 421 ft.; drlg. 1,721 ft.
United Gas Public Service Co.'s No. 2 Ardis & Co., 330 ft. N, 1,980 ft. E, SW cor. sec. 14-23-16.
Drlg. 4,257 ft.
United Gas Public Service Co.'s No. 3 Rodessa O. & Land Co., 660 ft. S, NW cor. sec. 22-23-16.
Drlg. 5,130 ft.
United Gas Public Service Co.'s No. 1 Poole, 660 ft. S and W, NE cor. Sec. 21-23-16.
Set 7-in. 5,955 ft.
United Gas Public Service Co.'s No. 1 Ardis & Co., 660 ft. N, 1,980 ft. W, SE cor. Sec. 14-23-16.
Set 7-in. 5,981 ft.; T.D. 6,010 ft.
G. H. Vaughn Prod. Co. No. 2 Hunter Derryberry, 330 ft. S, 772 ft. W, NE cor. NW NW sec. 14-23-16.
Drlg. 5,748 ft.

Sabine Parish—Zwolle

Alexander & Crane's No. 1 Fogman, SE cor. N½ SW NE Sec. 18-7-11.
S.D. 2,655 ft.
Ivan A. Allen No. 1 Travis, 330 ft. S and W of NE cor. NE NW Sec. 13-7-11. W.O. 6-in. csg., 2,361 ft.; (corrected).
Ellis Prod. Co. No. 1 Williams, 330 ft. S and W, NE cor. SE NE sec. 23-7-11.
S.D. 115 ft.
H. C. Mauiding's No. 1 Davis, 350 ft. N and W, SE cor. NE NE Sec. 2-7-11.
S.D. 400 ft.
A. H. Turner's No. 1 Baker, 330 ft. S and E NW cor. NW NE Sec. 36-8-12.
D.S. stuck 4,400 ft.

EAST TEXAS

(Border Counties)

Cass County

American Liberty Oil Co.'s No. 1 J. B. Rodgers, 330 ft. N, 430 ft. W, SE cor. of 160-ac. tract in C. M. Robinson Sur.
Coring 5,793 ft.
R. W. Norton's No. 1 Haywood, 660 ft. N, 580 ft. W, SE cor. Priscilla Evans Sur.
Drlg. 5,399 ft.

Harrison County

R. C. Payne et al's No. 1 Lowery, H. D. Spain Sur.
P.B. to 2,534 ft.

Marion County

Ed S. Holman's No. 1 Henderson, R. Bennington Sur.
P.B. to 2,443 ft.

Panola County

R. A. Graddy's No. 1 M. J. McCormick, J. McAdams Sur.
Dry and abd. 2,291 ft.
George Hudson et al's No. 1 J. F. Nail, C. McGeary Sur.
Set 8-in. 40 ft.; fishing for core bbl. at 2,345 ft.
Geo. Le Grand's No. 1 P. J. Wardleigh, A. Thompson Sur.
Set 16-in. 62 ft.
R. W. Price's No. 1 Crawford, J. A. Williams Sur.
Set 10-in. 64 ft.
Fred Stovall Drlg. Co.'s No. 1 H. D. Ivey, P. Martin H.R.S.
S.D. for csg. 1,980 ft.

Shelby County

Cliff Stoval's No. 1 Pickering Lbr. Co., C. H. Patterson Sur.
S.D.; rig repair, 1,486 ft.

WEST TEXAS WILDCATS

Week Ending December 14

Brewster County

F. C. Dodson's No. 1 Texas American Syndicate, 660 ft. from N and E, Sec. 66, Blk. A-9, G.H.&S.A. Sur.
T.D. 1,715 ft.; R.U. on new location.
Joiner et al's No. 1 McIntyre, 353 ft. from S, 2,290 ft. from E of Sec. 21, Blk. 353, W. M. Mitchell Sur.
S.D. 2,150 ft.
G. H. Storey's No. 1 Wilson, 1,980 ft. from N and E lines of Sec. 3, Blk. 113, T.&St.L. Sur.
Elev. 3,609 ft.; S.D. 1,875 ft.

Concho County

Maverick Oil Co.'s No. 1 Jim Rice, 330 ft. from S and W lines of NW¼ of Sec. 16, S.N. Ry. Sur.
Drlg. 825 ft.
John W. Westbrook's No. 1 Ledbetter, 1,950 ft. from N and 3,300 ft. from E lines of Sec. 2, Sur. No. 1,673.
Drlg. 1,240 ft.

Crane County

Big Basin Pet. Corp.'s No. 1 Cowdin, 330 ft. from N and 1,650 ft. from E, sec. 77, Blk. X.
S.D. 1,315 ft.
Gulf Prod. Co.'s No. 1 Waddell, C NW NW Sec. 4, Blk. B-27, P.S.L. Sur.
Top Simpson 6,060 ft.; T.D. 6,450 ft.; P.B. to 6,317 ft.; bailed 30 bbls. oil; C.O. to bottom; 80 ft. oil tested 33.5 gr.
Humble O. & R. Co. No. 1 J. B. Tubb, 950 ft. from N and 900 ft. from W lines of sec. 11, Blk. B-27, P.S.L. Sur.
Rigged up rotary.
Moore Bros. No. 1 Barnsley, 1,320 ft. from S and W, Sec. 43, Blk. 32, P.S.L. Sur.
Location.
Texas Co. No. 1 E. Hughes, 2,964 ft. from S and 300 ft. from E, sec. 4, G.C.&S.F. Sur.
Material.
Wahlenmaier Pet. Corp.'s No. 2 Kloh, 330 ft. from S and W, Sec. 33, Blk. 44, Twp. 3s, T.&P. Sur.
Drlg. 2,857 ft.

Crockett County

J. G. Harris' No. 1 Parker, 438 ft. from S and 7,200 ft. from E, sec. 83, Blk. 1, I.&G.N. Sur.
S.D. 1,065 ft.
Leslie-Hillier et al's No. 1 Todd, 1,300 ft. N and 330 ft. E, Sec. 36, Blk. WX, G.C.&S.F. Sur.
S.D. 821 ft.
John I. Moore's No. 1 A. C. Hoover, 330 ft. from S and E lines of Sec. 4, Blk. FF B.&B. Sur.
Spudded and shut down.

Culberson County

Anderson-Prichard Oil Corp., Magnolia Pet. Co. et al's No. 1 Borders, 1,255 ft. N and 2,305 ft. from W, Sec. 34, Blk. 69, P.S.L. Sur.
Drlg. 2,985 ft.

Dawson County

Adams & Turner's No. 1 John Robinson, 1,320 ft. from N line, 1,320 ft. from W line of Sec. 46, Blk. M, E.L.R.R. Sur.
S.D. 4,860 ft.

Ector County

W. P. Dunning, Jr., et al's No. 1 Mrs Clarence Scharbauer, 440 ft. from S and 2,200 ft. from W lines of Sec. 33, Blk. 44, Twp. 1n, T.&P. Sur.
Drlg. 3,522 ft.
Gulf Prod. Co.'s No. 3 Goldsmith, 440 ft. from S and E, Sec. 22, Blk. 44, Twp. 1s, T.&P. Sur.
T.D. 4,110 ft.; shut in for storage; flowed 1,385 bbls. in 24 hrs.
Gulf Prod. Co.'s No. 2 Goldsmith, 2,200 ft. from N and 440 ft. from E lines of Sec. 15, Blk. 44, Twp. 1s, T.&P. Sur.
T.D. 3,967 ft.; fishing; reported 42,900,000 ft. of gas.
Phillips Pet. Co. No. 3 Cowden, 440 ft. from N and 1,320 ft. from W, sec. 26, blk. 44, Twp. 1s, T.&P. Sur.
Drlg. 660 ft.
Sun and Atlantic's No. 1 O. B. Holt, 1,980 ft. from S and 660 ft. from W lines of Sec. 6, Blk. 42, Twp. 1n, T.&P. Sur.
Shot with 110 qts. at 4,445-80 ft.; C.O.; flowing 58 bbls. of fluid 10% wtr. in 24 hrs.
York & Harper's No. 1 H. C. Foster, 660 ft. S and E Sec. 13-43-2s, T.&P. Sur.
S.O. 4,010-20 ft.; fishing 4,332 ft.

Edwards County

O. L. Williams' No. 1 Holman, 300 ft. from N and E, Sec. 145, C.C.S.D.&R.G.N.G. Sur.
S.D. 1,340 ft.

Fisher County

L. A. Daniels et al's No. 1 J. J. Nickless, 1,700 ft. S and 2,070 ft. W of SW cor. of Sec. 60, H.T.&B. Sur., but in Sub. 1, G. W. Lawrence Sur., 6 miles E of Roby.
S.D. 685 ft.
Tide Water's No. 2 Howard, 1,620 ft. from N and 1,650 ft. from E lines of Sec. 186 Blk. 2, H.&T.C. Sur.
Drlg. 3,520 ft.
Tide Water Oil Co.'s No. 1 Newman, 1,-766 ft. from N and 1,954 ft. from W of NE¼ Sec. 2½, John Rodman Sur., 4 miles SE of Roby.
Top Noodle Creek lime 3,280 ft.; drlg. 3,676 ft.

Gaines County

Stogner's No. 1 Kirk, SW¼ Sec. 28, Blk. A-21, 8 miles S of Seminole.
Location.
Wahlenmaier Pet. Co. et al's No. 1 E. H. Jones, 660 ft. S and W, Sec. 414, Blk. G, C.C.S.D.&R.G.N.G. Sur., 22 miles NW of Seminole.
Drlg. 2,222 ft.
W. T. Walsh et al's No. 1 Averitt, 330 ft. N and E lines Sec. 228, Blk. G, W.T.R.R. Sur.
Elev. 3,322 ft.; gas show 2,785 ft.; increase 2,795 ft.; increase gas 3,132 ft.; lost tools again; est. 15,000,000 ft. of gas; decreased to 4,000,000 ft.; T.D. 3,-132 ft.; fishing.

Garza County

Grisham & Hunter No. 1 Sullivan, 330 ft. from S and 2,310 ft. from E, sec. 3, K. Aycock Sur.
Drlg. 953 ft.

Glasscock County

John I. Moore et al's No. 1 J. S. McDowell, 1,980 ft. from N line and 660 ft. from E line of Sec. 22, Blk. 34, Twp. 2s, T.&P. Sur.
Topped lime 9,471 ft.; show oil and gas 9,484-9,520 ft.; increase oil 9,594-9,600 ft. and 9,633-55 ft.; T.D. 10,115 ft.; made 150-bbl. flow when opened on test; were to deepen 5 days; burned equipment except rig.

Howard County

Superior Oil Co. No. 1 Logan.
Drlg. 1,880 ft.

Hudspeth County

Hayman-Krupp Oil & Land Co. No. 1 Saxton, 1,464 ft. from S and 291 ft from E, sec. 34, Blk. 74, Twp. 6, T.&P. Sur.
Rigged up.

Jeff Davis County

C. M. Joiner's No. 1 Jones & Coffield, 710 ft. from N and 1,322 ft. from E, Sec. 6, Blk. 3, H.&T.C. Sur.
Twisted off D.S. 2,170 ft.

Jones County

Brown Eagle Oil Co. et al's No. 1 B. Fields, 4,166 ft. from N and 1,414 ft. from E lines of S. Andrews Sur.
Drlg. 2,025 ft.; S.O. 2,010 ft.
Conway & Gholson's No. 1 Cauthen, 150 ft. from S and W lines of Sec. 24, G. A. Williams Sur.
Drlg. 1,890 ft.
J. N. DeMont No. 1 L. G. Roberts, 150 ft. from N and 1,287 ft. from E lines, John Casner Sur.
Location.
Jamison et al No. 1 Triplett, 3,284 ft. from N and 200 ft. from E, Jasper Gocher Sur. No. 199.
Drlg. 975 ft.
J. N. Cooper's No. 1 W. E. Robinson, 660 ft. from S and E, Blk. 7, L. Matthews Sur.
Location.
R. L. Crawford et al's No. 2 Waltzer, 200 ft. from S and 532 ft. from W, Sec. 1, Blk. 2, T.&N.O. Sur.
Oil sand 1,945-51 ft.; T.D. 1,951 ft.
Bob Elmore No. 1 Coton, 675 ft. from N and 2,050 ft. from W lines of SW¼, sec. 10, D.D.&A. lands, 3 miles W of Avoca.
Spudded.
Farris & Fikes No. 3 Jennings, 220 ft. from S and W of NE of SE¼, Sec. 207, B.B.&C. Sur.
Machine rigged up.
Farris & Fikes' No. 1-A Jennings, 1,980 ft. from S and 150 ft. from W, Sec. 1, I.&G.N. Sur.
Machine.
Tom D. Medders et al's No. 1 J. E. Manley, 1,170 ft. from S and E lines of Sec. 35, Blk. 14, T.&P. Sur.
Drlg. 1,625 ft.
Moutray Oil Co. No. 1 Frank Olney, 2,333 ft. from N and W lines of 140-ac. tract in sec. 4, G. Martinez Sur. No. 195.
Drlg. 1,100 ft.
Peckham & Danciger's No. 1 City of Stamford, 1,316 ft. from N and 174 ft. from E, sec. 204, B.B.B.&C. Sur.
T.D. 1,816 ft.; ran csg.; show oil 1,816 ft.
Reliance Oil Co.'s No. 1 Crow, 660 ft. from S and 1,320 ft. from E lines of Sec. 9, D.&D.A. Sur.
Drlg. 2,025 ft.; S.O. 1,963 ft.
Shaheen et al's No. 1 J. J. Steele, 660 ft. from S and 1,980 ft. from E, Sec. 11, Blk. 15, T.&P. Sur.
S.D. 525 ft.
Shaheen et al No. 1 T. B. McCoy, 660 ft. from N and 1,320 ft. from E of most easterly SE cor. sec. 1, Blk. 16, T.&P. Sur.
Rigged up.
Sheldon Bros.' No. 1 J. Dillard, 1,000 ft. from S and 200 ft. from E, sec. 2, Blk. 17, T.&P. Sur.
Location.

Kimble County

Forrest Dev. Co.'s No. 1 Stopp, 660 ft. from N and 1,866 ft. from W, Sec. 682, Blk. N, G.H.&S.A. Sur., 18 miles SE of Junction.
Drlg. 2,500 ft.

Loving County

D. C. Evans' No. 1 W. D. Johnson, 2,310 ft. from N and 1,650 ft. from W, Sec. 13, Blk. 57, Twp. 1, T.&P. Sur.
S.D. 2,685 ft.

Martin County

Wright & Scott's No. 1 Flannigan, 330 ft. N and E, Sec. 22, Blk. 37, Twp. 1s, T.&P. Sur.
S.D. 100 ft. for casing.

McCulloch County

Mark Hill No. 1 McCall & Curtis, 160 ft. from S and E lines, sec. 692, 12½ miles N of Brady.
Set csg.; T.D. 760 ft.
Mark Hill's No. 1 Moore Bros., 934 ft. from S and 150 ft. from E lines of Sec. 3, State School Land Sur.
T.D. 690 ft.; P.B. to 695 ft.

Menard County

W. A. Snyder No. 1 L. E. Smith, 160 ft. from S and E of C. H. Booth Sur. 270, 14 miles NE of Brady.
Drlg. 1,000 ft.
Wilcox O. & G. Co. No. 1 Merchenson, 330 ft. from S and W, Sec. 158, E.L.R.R. Sur., Abst. 1,840, 8 miles S of Menard.
Rig.

Mitchell County

Lockhart et al's No. 1 W. C. Berry, 330 ft. from N and 2,310 ft. from E, Sec. 84, Blk. 97, H.&T.C. Sur.
S.D. 1,802 ft.; show oil 1,716-36 ft.; acidized; no results from acid.
Southern Union Prod. Co.'s No. 1 Castin, 330 ft. from S and E, Sec. 11, Blk. 33, 1s, T.&P. Sur.
Spudded and S.D.

Nolan County

Harris et al's No. 1 Georgia Institute of Technology, 330 ft. from S and 1,320 ft. from W, Sec. 89, Blk. 24, T.&P. Sur.
S.D. 200 ft.

Pecos County

Ajax Drlg. Co.'s No. 1 University, 2,310 ft. from S and W, Sec. 13, Blk. 18.
Drlg. 1,539 ft.
Cardinal Oil Co. No. 1-43 White & Baker, 330 ft. from N and E, sec. 43, Blk. Z, T.C.R.R. Sur.
Top sand 705 ft.; T.D. 804 ft.; U.R. csg.
Dobbs Oil Co. No. 1 Rooney, 990 ft. from E and 800 ft. from N, sec. 12, Blk. 125, T.&St.L. Sur.
Location.
C. R. Richards' No. 4 Courtney, 920 ft. from N and W, Sec. 78, Blk. OW, 360 ft. S of No. 2.
Elev. 2,967 ft.; may skid.
Tex-Mex Pet. Co.'s No. 1 Phillips-Brandenburg, 330 ft. from S and E of N half Sec. 42, Blk. 8, H.&G.N. Sur.
T.D. 1,605 ft.; set csg.
Trans-Pecos Oil Co.'s No. 1 F. W. Popham, 1,650 ft. from S and E, Sec. 235, Blk. 11, G.H.&S.A. Sur.
To spud.
Trans-Tex. Oil Co.'s No. 1 Caldwell, 330 ft. from E line and 330 ft. from S line of Sec. 27, Blk. 40, Twp. 9, T.&P. Sur.
S.O. 3,905-4,000 ft.; 1 baller oil in 48 hrs.; S.D. 5,153 ft.

Reagan County

Dobbs Oil Co.'s No. 2 Friend, 660 ft. from W and 1,375 ft. from S, Sec. 3, Wm. Allen Sur.
Location.
Skelly Oil Co.'s No. 6 Grayson, 1,320 ft. from N and 440 ft. from W, Sec. 33, Blk. 8, University Lands.
Drlg. 1,047 ft.

Reeves County

Dunigan's No. 1 Davis, 330 ft. from N and W, Sec. 7, Blk. 58, P.S.L. Sur.
Location.
Grisham-Hunter Corp.'s No. 1 T. P. Land Trust, 1,320 ft. from S and W lines, Sec 27, Blk. 57, Twp. 2, T.&P. Sur.
S.D. 3,225 ft.; show oil 2,972-85 ft. and 3,200-10 ft., and 3,222 ft.
Washington Oil Co.'s No. 1 J. M. Radford Grocery Co., 2,640 ft. from S and 340 ft. from E, Sec. 39, Blk. 56, P.S.L. Sur.
Elev. 3,169 ft.; T.D. 502 ft.

Runnels County

John Caster et al's No. 1 Giesecke, 330 ft. from N and 713 ft. from E, Sub. 4, Blk. 130, J. Hughes Sur. 227.
S.D. 502 ft.

Schleicher County

John M. Cooper et al's No. 1 Bert Page, 1,296 ft. from N line, 1,470 ft. from W line of Sec. 40, Blk. L, G.H.&S.A. Sur.
T.D. 6,257 ft.; P.B. to 5,555 ft.; acidized and made estimated 4,000,000 ft. gas; P.B. with 25 sacks cmt.
Cecil Rains et al No. 1 Judkins & Spencer, C SW¼ sec. 4, Blk. V-28.
S.D. 2,205 ft.; moving in heavy rotary.

Scurry County

Coffield & Guthrie's No. 1 Wade, 990 ft. from N and 330 ft. from W, Sec. 115, Blk. 97, H.&T.C. Sur.
T.D. 3,168 ft.; P.B. to 1,900 ft.; pulling 8-in. csg.

Sutton County

Fleetborn Oil Corp.'s No. 1 G. S. Allison, 660 ft. from S and W, Sec. 49, Blk. A, G.W.T.&P. Sur.
Saturated sand 3,382-92 ft.; D.S. test 3,-347-66 ft. showed 5 gals. heavy oil and small amt. drlg. fluid; drlg. 4,225 ft.

Taylor County

Hightower O. & R. Co. No. 1 E. E. Sadler, 250 ft. from N and 4,400 ft. from W, in C. Cole Sur., 2 miles W of Wiley.
Drlg. 756 ft.

Tom Green County

Mays Oil Co.'s No. 1 I. Funk, 1,980 ft. from S and 660 ft. from W, Sec. 38, Blk. 8, H.&T.C. Sur.
S.D. 1,452 ft.; hole full S.W.
Twin Oil Co.'s No. 1 W. E. Green, 1,650 ft. from N and 1,400 ft. from W, L. P. Moore Sur. 169½.
S.D. 318 ft.

Upton County

Greencliff Oil Corp. et al No. 1 J. H. Tippett, C NE¼ sec. 58, Blk. Y, T.C. Sur.
Location.
J. G. McKenzie's No. 1 Taylor, 1,650 ft. from S and 330 ft. from E lines of Sec 22, Blk. B-2, G.H.&S.F. Sur.
T.D. 630 ft.
A. E. Lynch et al's No. 1 Shark, 330 ft. from N and E, Sec. 25, Blk. 2, M.K.&T. Sur., 2 mi. E and 8 mi. N of McCamey.
Drlg. 2,070 ft.

Ward County

Abell Brothers' No. 1 Lancaster Estate, 394 ft. N 20 degrees and 15 minutes W of NE cor. Sec. 61, Blk. 8, H.&G.N. Sur. in Pecos County, 5½ miles down Pecos River from NW cor. of Pecos and E cor. of Reeves County.
T.D. 690 ft.; set csg.

Olsen & Anderson No. 1 Yell, 330 ft. NE and SE lines of W. F. Stewart Sur., sec. 6.
Drlg. 1,910 ft.

C. Cochran's No. 1 K. Greene, 990 ft. from NW and 2,980 ft. from SW, Sec. 29, Blk. B-29, P.S.L. Sur.
S.D. 1,375 ft.

Dobbs Oil Co. No. 1 A. F. Bray.
Drlg. 1,180 ft.

Stanolind O. & G. Co.'s No. 1 W. H. Martin, 1,650 ft. SW and 330 ft. from SE Sec. 48, Blk. 34, H.&T.C. Sur.
T.D. 2,987 ft.; P.B. to 2,834 ft.; to complete as gasser.

Wahlenmaier et al's No. 1 Potts, 990 ft. from SW and 330 ft. from SE, Sec. 28, Blk. B-29.
S.D. 2,205 ft.

Winkler County

Atlantic O. P. Co. No. 1 Lovett, 2,260 ft. from W and 2,200 ft. from S, Sec. 36, Blk. 26, P.S.L. Sur.
Drlg. 2,600 ft.

Crafton Oil Co.'s No. 2 Pure-Walton, 2,200 ft. N and E, Sec. 1, Blk. 3-B. Material.

Crafton Oil Co.'s No. 1 Pure-Walton, 440 ft. E and 1,320 ft. S, Sec. 2, Blk. 3-B, P.S.L. Sur.
Drlg. in under pressure, 3,190 ft.

Emperor Oil Co.'s No. 1 Continental-Holley, 330 ft. from S and 2,310 ft. from W, Sec. 12, Blk. B-12.
T.D. 2,005 ft.; recmtng. csg.

Gulf Prod. Co. No. 1 Hill, 440 ft. from S and 2,200 ft. from E, sec. 9, Blk. B-11. Location.

Gulf Prod. Co.'s No. 3 Keystone Cattle Co., 330 ft. from N and W of NE¼ Sec. 11, Blk. B-3.
T.D. 3,765 ft.; P.B. 3,320 ft.; cleaning out.

Gulf Prod. Co.'s No. 4 Keystone Cattle Co., 330 ft. from N and E, Sec. 20, Blk. B-3.
T.D. 3,756 ft.; P.B. 3,375 ft.; S.D.

Gulf Prod. Co.'s No. 8 Keystone Cattle Co., 330 ft. from S and W of Sec. 11, Blk. B-2.
Elev. 2,964 ft.; T.D. 4,462 ft.; T.A.

Gulf Prod. Co.'s No. 9 Keystone Cattle Co., 330 ft. from S and W of Sec. 14, Blk. B-2.
Elev. 2,946 ft.; S.D. 4,126 ft.

Gulf Prod. Co. No. 10 Keystone, 440 ft. from E and 2,200 ft. from S, Sec. 10, Blk. B-3.
Drlg. 1,200 ft.

K-D Oil Co.'s No. 1 P. Mitchell, 1,650 ft. from N and 2,310 ft. from E, Sec. 34, Blk. B-10, P.S.L. Sur.
Cable tools rigged up.

Magnolia Pet. Co. No. 1 State-Walton, 2,310 ft. from S and 990 ft. from E, sec. 7, Blk. B-3.
Cellar.

Magnolia Pet. Co. No. 2 Sealey, 330 ft. from S and W, Sec. 94, Blk. A.
Drlg. 535 ft.

Mascho Oil Co.'s No. 1 Evans, 1,320 ft. from N and W, Sec. 8, Blk. 56.
S.D. 80 ft.

Mascho Oil Co.'s No. 1 Evans, 1,170 ft. from N and 1,320 ft. from W, Sec. 44, Blk. 73, P.S.L. Sur.
S.D. 217 ft.

Richardson's No. 1 B. F. Jenkins, 440 ft. from S and E, Sec. 13, Blk. 77, P.S.L.
T.D. 3,498 ft.; testing tubing.

Sisel Oil Co.'s No. 1 Lowett, 330 ft. from N and E, Sec. 36, Blk. 26, P.S.L. Sur.
T.D. 3,130 ft.; P.B. 3,091 ft.; 2 bbls. oil and 1,840,000 ft. gas per day.

Thurman et al's No. 1 Seth Campbell 18-B-3, 330 ft. from S and 1,650 ft. from W lines of Sec. 18, Blk. B-3, P.S.L. Sur.
T.D. 3,303 ft.; flowed 75 bbls. oil in 8 hrs. then swabbed 75 bbls. in 6 hrs.; perforated csg. 2,850-3,294 ft.; C.O.

Wahlenmaier et al's No. 1 Walton, 990 ft. from S and 330 ft. from E, Sec. 3, Blk. 26.
Drlg. 3,067 ft.

Wilgo Oil Corp.'s No. 1 Campbell, 900 ft. from N and 300 ft. from E Sec. 2, Blk. 5, P.S.L. Sur., 3 miles E of Kermit.
Elev. 2,884 ft.; T.D. 4,639 ft.; P.B. 2,806 ft.; S.D.

Wilson Keyes No. 1 Car-Tix O. & G. Co. Loc.

Yoakum County

C. J. Davidson et al's No. 1 Bennett, 1,320 ft. from N and E, Sec. 678, John H. Gibson Sur.
Elev. 3,557 ft.; T.D. 5,090 ft.; 4,000 ft. fluid in hole, mostly oil; set 6⅝-in. csg. at 4,651 ft.

NORTH CENTRAL TEXAS WILDCATS

Week Ending December 14

Archer County

Darsey and Continental No. 1 Jones, 150 ft. from N and W lines of SW¼ of sec. 1840, T.E.&L. Sur.
S.D. 953 ft. for 6-in. csg.

Deep Oil Dev. Co. No. 3 Lee, 4-A, L. F. Wilson, 990 ft. from S and 565 ft. from E lines of sec. 75, A.T.N.C.L. Sur.
Oil sand 2,203-08 ft.; flowed 92 bbls. first hr.

Humble O. & R. Co. No. 1 Wm. Coleman, 1,482 ft. from N and 2,897 ft. from W of SE cor. of Blk. 74, A.T.N.C.L. Sur.
S.D. 2,300 ft.

Solo Oil Co. No. 1-B Hamilton, 150 ft. from S and 977 ft. from E lines of N 20 of S 243 acres of E½ of Blk. 1, Crawford Subd. Location.

J. B. Shira No. 1 D. L. Wolf, 150 ft. from S and E lines of Lot 56, Blk. 4, Clark & Plub Sur. Location.

Baylor County

Evans & Collins No. 1 G. Longley, 185 ft. from N and 1,930 ft. from E line of N. Dennis Sur.
S.D. 1,250 ft.

W. P. Morris et al No. 1 C. T. Porter, 1,170 ft. from N and 150 ft. from E. Edward Brown Sur.
S.D. 1,063 ft.

Cooke County

T. P. Frost No. 1 Dangelmayer, 450 ft. from N and 150 ft. from W lines of SE¼ of Blk. 20, G. Frey Sur. A-516. Location.

Big Indian Oil & Dev. Co. No. 1 J. S. Floyd, 1,044 ft. from E and 2,533 ft. from N of extreme SW lines, E. Barnes Sur.
S.D. 4,005 ft.

Hardin Oil Co. No. 1 J. G. Bonner, 1,350 ft. from W and 150 ft. from N, J. Lindheimer Sur.
Drlg. 50 ft.

J. F. Hart No. 1 Gwyn, 150 ft. from N and 1,320 ft. from W lines of Marshall University Sur. A-619.
T.D. 1,120 ft.; S.D.; saturated lime 1,039-41 ft.

Jacob-Bell Oil Co. No. 1 B. Dudenhofer, 1,340 ft. from S and 330 ft. from W lines of Wm. A. Pledger Sur.
Drlg. 950 ft.

J. N. Martin et al No. 1 Mrs. J. C. Talbot, 1,500 ft. from S and 900 ft. from E line, Jacob Lawson Sur., 2 miles SE of Gainesville.
Top sand 1,605 ft.; T.D. 1,615 ft.; 650 ft. oil in hole in 12 hrs.; running tubing.

Mills & Carey No. 1 A. M. Bezner, 150 ft. from N and W lines of J. B. Trenary Sur.
Spudded.

Regal et al No. 1 Clem Hermes, 1,375 ft. from N and 200 ft. from E lines of A. W. Van Slyke Sur.
Drlg. 650 ft.

J. M. Russell et al No. 1 B. B. Bawley, 1,450 ft. from S and 150 ft. from W lines of Blk. 24, John Barnett Sur.
Spudded and S.D.

Sunray Oil Co. et al No. 1 A. C. McCall, 500 ft. from S and 550 ft. from W lines of W. H. White Sur., NE of Gainesville in bend of river.
S.D. 2,365 ft.

Woodbine Oil Co. No. 1 Potter & Potter, 150 ft. from N and E of SE cor. of G. Morris Sur., but in J. Gorham Sur.
Spudded and S.D.

Denton County

Burns Oil Co. No. 1 J. T. Harmon, 1,040 ft. from N and 370 ft. from W lines of lease, J. M. Moses Sur.
Drlg. 1,760 ft.

Oil Finance Corp. No. 1 J. S. Gambill, 400 ft. from S and 550 ft. from W lines of T. Burress Sur.
Spudded and S.D. on new hole, south of Denton.

Wagener et al No. 1 C. N. Skaggs, 1,700 ft. from N and 300 ft. from E lines of W. C. Whorton Sur.
S.D. 1,860 ft.

Jack County

Crenshaw et al No. 1 S. J. Beasley, 330 ft. from S and E lines of N½ of Beasley lands in George Hardesty Sur.
Gas sand 2,954-61 ft.; fishing tools.

Nelson Oil Synd. No. 1 J. P. McCoy, 330 ft. S and E of most northerly NW cor. of A. S. Ensworth Sur.
Drlg. 740 ft.

Singer Steel & Metal Co. No. 1 J. A. Hester, 330 ft. from S and W lines of J. Ash Sur.
Drlg. 2,225 ft.

Montague County

Benson Bros. & McIntyre No. 1-B Williams Est., 4,400 ft. from S and 1,900 ft. from W of NE cor. of George Dooley Sur.
Drlg. 2,300 ft.

Boardman Bros. No. 1 L. Keck, 6,200 ft. from S and 2,600 ft. from W of NE cor. of Wm. Donoho Sur.
S.D. 897 ft.

J. F. Hart No. 1 W. M. Talley, 1,000 ft. from SW and 200 ft. from SE, J. Perrin Sur.
Fishing 350 ft.

Jim Seeds et al No. 1 Coombs, 150 ft. from N and E lines of W 80 acres of 160-ac. farm, sec. 58, M.E.P.&P. Sur.
Derrick.

F. L. Valch No. 1 Adams, 150 ft. from N and W lines of 80-ac. farm, R. H. Grimes Sur. A-288.
Drlg. 1,150 ft.

W. C. Wells et al No. 1 Aldrich, 800 ft. from SE and 1,200 ft. from NE lines of V. B. Matthews Sur. A-557.
Bldg. derrick.

M. C. Wells No. 1 Collier, 750 ft. from SW and 1,120 ft. from SE line of M. Hunt Sur., sec. 14.
Spudded and S.D.

Westqumo Co. No. 1 J. M. Willett, 480 ft. from S and 400 ft. from E lines of Blk. 3, Harriet Brown Sur.
Drlg. 830 ft.

Wichita County

Jack Faraboe No. 1 L. F. Ramming, 150 ft. from S and W lines of sec. 3, B.S. &F. Sur.
Drlg. 1,356 ft.

Tom Medders No. 1 Humphreys & Bullington, 1,162 ft. from S and 927 ft. from E lines of Blk. 5, League 2, D.C.S.L. Sur. A-57.
R.U. rotary.

Wilbarger County

Franklin Oil Co. No. 1 D. G. Feiler et al, 2,850 ft. from N and 1,550 ft. from W lines, sec. 108, Blk. 14, H.&T.C. Sur.
T.D. 1,520 ft.; C.O.

Smith No. 1 S. A. Dill et al, 150 ft. from N and E lines, sec. 82, Blk. 14, H.&T.C. Sur.
T.D. 1,600 ft.; running 6-in. csg.

Wise County

W. B. Hamilton No. 1 S. L. McNay, 1,320 ft. from NE and 980 ft. from SE lines of N. Ledbetter Sur.
S.D. 1,277 ft. for 5-in. csg.

Jarvis & Nix et al No. 1 Williams, 1,100 ft. from S and 1,400 ft. from E lines of Blk. 4, F.C.S.L. Sur.
T.D. 975 ft.; moving in equipment.

Young County

Carl Pet. Co. No. 1 Goss, 150 ft. from S and W lines of sec. 1592, T.E.&L. Sur. Location.

Christie Bros. No. 1 Primitive Baptist Church, 3,394 ft. SE and 500 ft. from NE lines of S. L. Hill Sur. A-126. Location.

H. J. Cox No. 1 E. A. Corbett, 650 ft. from N and 750 ft. from E lines of Ruthy Campbell Sur.
T.D. 4,343 ft.; running 2-in. tubing.

Horwitz & Oldham No. 1 Thompson, 150 ft. from N and 750 ft. from W lines of Sec. 333, T.E.&L. Sur.
Drlg. 750 ft.

C. D. Neff et al No. 1 W. A. Dennis, 1,530 ft. from N and 1,782 ft. from E. C. F. Bass Sur.
Drlg. 650 ft.

Pitzer & West No. 1 McCluskey, 660 ft. from N and W lines of 74-ac. tract, sec. 1104, T.E.&L. Sur. A-827.
Rig.

Pitzer & West No. 1 J. N. Boozer, 3,000 ft. from S and 1,800 ft. from E lines of sec. 1,104, T.E.&L. Sur., 150 ft. south of river.
Lime 3,600-05 ft.; hole full oil; acidized with 3,000 gals. acid; flowed 35 bbls. per hr.; cased off upper pay, 3,790 ft.; drlg.

Roberts Oil Corp. No. 1 McCarroll, 330 ft. from N and E lines of W. Fullerton Sur.
Oil pay 3,685-89 ft.; flowed by heads every 2 hrs.; killed well to run csg.

Humble O. & R. Co. No. 1 Mrs. Fannie Knox, 1,439 ft. from N and 2,056 ft. from W lines, Washington Co. R.R. Sur.
Drlg. 4,250 ft.; black shale.

Gulf Coast Water Shipments—October, 1935

Company, terminal—	Crude—Coastwise	Crude—Exports	Refined—Coastwise	Refined—Exports	Total
Atlantic P. L. Co.:					
Atreco	1,554,394.74	108,311.46	3,444.74	.....	1,666,150.94
Texas City	262,218.97	.....	2,743.90	.....	265,962.87
Harbor Island	353,350.13	.....	.....	.....	353,350.13
Gulf Ref. Co.:					
Port Arthur	551,272.45	.....	2,503,594.98	229,319.59	3,284,187.02
Humble O. & R. Co.:					
Baytown	538,564.12	255,223.22	2,915,559.23	507,969.76	4,217,316.33
Harbor Island	1,240,596.05	310,424.70	.....	.....	1,551,020.75
Texas City	960,177.25	.....	.....	.....	960,177.25
Ingleside	46,447.99	78,240.75	.....	.....	124,688.74
Magnolia Pet. Co.:					
Beaumont	732,554.85	.....	2,648,480.20	.....	3,381,035.05
Pure Oil Co.:					
Smiths Bluff	318,818.00	.....	888,980.00	.....	1,207,798.00
Shell Pet. Corp.:					
Houston	145,422.00	91,267.00	1,194,285.00	15,123.00	1,446,097.00
Norco	.....	.....	453,599.00	.....	453,599.00
Standard Oil of La.:					
Baton Rouge	79,005.00	.....	1,199,398.00	191,941.00	1,470,344.00
Sun Pipe Line Co.:					
Sabine Pass and Sun	1,921,637.91	.....	.....	.....	1,921,637.91
Texas Co.:					
Port Arthur	1,164,529.00	781,762.00	2,515,003.00	885,509.00	5,346,803.00
Miscellaneous:					
Houston	1,479,817.48	191,711.08	906,665.17	432,344.84	3,010,538.57
Total Oct, 1935	11,348,805.94	1,816,940.21	15,232,753.22	2,262,207.19	30,660,706.56
Total Sept., 1935	11,407,619.56	1,312,127.61	12,788,584.48	2,661,493.65	28,169,825.30
Difference	58,713.62	504,812.60	2,444,168.74	399,286.46	2,490,881.26

Texas Panhandle Wildcats

Week Ending December 14

Carson County

Robert Watchorn's No. 1 Eller, 330 ft. from S and E lines of W½ and SE¼ of Sec. 9, Blk. 7, H.&G.N. Sur.
Drlg. 2,900 ft.

Childress County

Alma Oil Co.'s No. 1 Lowe, 660 ft. from N and W of SW¼ Sec. 417, Blk. H, W.&N.W. Sur., 8 of Kirkland.
S.D. 3,234 ft.; P.B. 5,682 ft.; perforated csg.; 34 holes from 5,670-80 ft.; pumping 20 bbls. water per hour; showing some oil.

Collingsworth County

Tom Hunter et al's No. 1 Tinsley, 660 ft. from S and 1,020 ft. from E of NE¼ Sec. 8, Blk. 13, H.&G.N. Sur.
Drlg. 936 ft.

Gray County

Christie & Hickman No. 1 Gethings, 330 ft. from S and 990 ft. from W of SE¼ Sec. 48, Blk. A-9, H.&G.N. Sur.
Drlg. 562 ft.

Drilling Exploration Co.'s No. 1 Lapold, 330 ft. S and W, Sec. 141, Blk. 3, I.&G.N. Sur.
Material.

Harry Foster's No. 1 Johnson, 330 ft. from N and E lines of Sec. 21, L. L. Erwin Sur.
S.D. 820 ft.

K. Kinseya No. 1 Stephens, 330 ft. from S and E of W½ of NE¼ sec. 187, Blk. B-2, H.&G.N. Sur.
Rig.

Plains Holding Co.'s No. 1 Morse-Gulf, 330 ft. S and W, Sec. 57, Blk. 25, H.&G.N. Sur.
Derrick.

Saulsbury Oil Co.'s No. 1 Carpenter, C NE¼ Sec. 37, Blk. 25, H.&G.N. Sur.
S.D. 2,925 ft.

Hall County

Davis et al's No. 1 Knorpp, 330 ft. S and W, Sec. 7, Blk. A, A.B.&M. Sur.
S.D. 530 ft.

Phillips Pet. Co.'s No. 1 Hughes, C N½ Sec. 4, Blk. H, H. Stephens Sur.
Drlg. 3,200 ft.

Hartley County

O. V. Beck et al's No. 1-A Matador ranch, 350 ft. from N and 385 ft. from W of most northerly NW cor. Sec. 20, Blk. 22, C.S.S. Sur.
Drlg. below 4,000 ft.

Hutchinson County

Burnett's No. 1 Ingerton, 770 ft. from S and 1,320 ft. from W, Sec. 327, Blk. 2, E.L.R.R. Sur.
Drlg. 2,652 ft.; tested 4,000,000 ft. gas.

Phillips Pet. Co. No. 1 Bryan, 330 ft. from S and E of NE¼ sec. 6, Blk. M-21, T.C. Ry. Sur.
Location.

Power Pet. Co.'s No. 1 Hodges, 660 ft. S and E of most southerly 80 acres of S 160 acres of SE 200 acres, Sec. 14, Blk. M-25, T.C. Sur.
Rig.

Stinnett Oil Co.'s No. 1 Starnes, 330 ft. from N and 275 ft. from W of E½ of NW¼ Sec. 22, Blk. M-23, T.C. Ry. Sur.
T.D. 3,121 ft.; C.O.; showing some wtr.

H. J. Wasson's No. 1 Haile, 330 ft. from S and W, NW 120 ac., Sec. 5, Blk. M-21, T.C. Sur.
Drlg. 2,871 ft.

Moore County

Anderson & Kerr's No. 1 Morton, 1,320 ft. from N and 2,640 ft. from E, Sec. 205, Blk. 3-T, T.&N.O. Sur.
Drlg. 350 ft.

Anderson & Kerr's No. 1 Wilson, 660 ft. from S and E, Sec. 209, Blk. 3-T, T.&N.O. Sur.
T.D. 2,764 ft.; standardized.

Anderson & Kerr's No. 1 Wilbur, 660 ft. from S and E lines of NW¼ of Sec. 226, Blk. 3-J, T.&N.O. Sur.
87,000,000 ft. gas at 3,090 ft. drlg. 3,125 ft.

Shamrock O. & G. Co. No. 1 L. L. Hill, 1,320 ft. from N and 330 ft. from E of NW¼ Sec. 359, Blk. 44, H.&T.C. Sur.
R.U. rotary.

Wheeler County

Allender & Heare's No. 1 Harvey, 330 ft. from S and W lines of E½ of SW¼ of Sec. 67, Blk. 13, H.&G.N. Sur.
Drlg. 1,310 ft.

Barnes & Green No. 1 George, 330 ft. from N and W of W½ of SW¼ Sec. 76, Blk. 17, H.&G.N. Sur.
Drlg. 287 ft.

Smith Bros. No. 1 Woodward, 1,650 ft. from N and 330 ft. E of E½ sec. 23, Blk. 24, H.&G.N. Sur.
Derrick.

Ochiltree County

James R. Macon's No. 1 W. R. Norris, 330 ft. S and 990 ft. E, Sec. 312, Blk. 43, H.&T.C. Sur.
Shut down.

PERSONAL

W. H. FRANCIS, general counsel for Magnolia Petroleum Company, who was recently elected vice president for Texas at the annual meeting of the Mid-Continent Oil and Gas Association, is a prominent member of the Texas bar and will take an active part in the association's program of study of the tax situation. The snap shot picture of Mr. Francis was taken at an outdoor gathering of oil men. In addition to being general counsel, Mr. Francis is vice president of the Magnolia company.

J. T. DUCE, geologist with The Texas Company, with MRS. DUCE, is en route to Argentina.

ROBERT WILKINSON of Calgary, Alberta, is visiting Toronto on business.

R. H. BRECKON, president of Vera Oilfields, Ltd. of Saskatoon, Saskatchewan, visited Calgary recently on business.

ANDREW WOLSEY, who has been drilling in the Turner Valley field in Alberta for the past two years, has returned to Sarnia, Ontario.

HAROLD MASSEY of the Massey Oil & Gas Company of Windsor, visited Chatham, Ontario, recently in connection with drilling operations in the Dover field.

W. J. COLE and BLOSS M. SUTHERLAND, oil operators, were both elected to the Petrolia, Ontario, town council at the municipal elections in December.

MRS. MATT COLLINS and daughter, who have been spending the summer in Canada, have returned to Trinidad, B. W. I., where MR. COLLINS is drilling superintendent for an English company.

P. D. MELLON of Calgary, Alberta, chief engineer of the Canadian Western Natural Gas, Light, Heat & Power Company, attended the district convention of the company at Lethbridge, Alberta, early in December.

T. P. THOMPSON and ALFRED MULHAUPT, JR., Bradford, Pa., oil men, have returned from a business visit in Harrisburg, Pennsylvania's capital city. Mr. Thompson is president of the Pennsylvania Grade Oil Association.

MRS. R. J. McDERMID and daughter, CATHERINE, who have been visiting the former's mother in Petrolia, Ontario, sailed on the "Santa Maria" from New York on December 7 for Peru, where they will join MR. McDERMID, who is employed with the International Petroleum Company at Talara.

O. B. STEPHENS has been named superintendent of the newly formed Onyx Refining Company, which recently purchased the old Phoenix Refining Company's plant near Hawley, Jones County, Texas.

H. T. CARPENTER, scout and land man for the Marathon Oil Company in the Ranger district, with headquarters in Eliasville, Tex., has been transferred to the Oklahoma district, with headquarters at Oklahoma City.

T. G. TRACY, Toledo, has been appointed manager of the Toledo division of Standard Oil Company of Ohio, succeeding J. J. ADAMS, who has been named manager of the merchandising department of the Cleveland home office. Mr. Tracy was assistant field manager for the northwestern Ohio territory prior to September, 1930, when he was transferred from Toledo to Marion, Ohio, as division manager.

J. C. AXELSON, president of the Axelson Manufacturing Company, Los Angeles, Calif., is spending some time in Tulsa.

T. H. POLLARD, petroleum engineer, has been added to The California Company's forces at Midland, Tex. He was formerly associated with the Texas Sulphur Company at Boling, Tex.

G. M. GUILBERT, vice president, and J. B. JENKINS, sales engineer, of the Twin Disc Clutch Company, spent a few days in Tulsa on a business trip through the Mid-Continent fields.

E. G. LEONARDON, with the Schlumberger Corporation, Houston, Tex., addressed members of the Fort Worth Geological Society at the geological laboratory of Texas Christian University on the evening of December 12. His talk dealt with core relations and electrical logging of formations.

O. F. BEATTY, formerly in charge of the San Antonio offices of the Magnolia Petroleum Company, has been transferred to Ada, Okla., to open a new company office there. He is succeeded in San Antonio by ALEX CHITWOOD, who returns to San Antonio after some time in the Dallas office.

BEN H. BLAND has joined the scouting section of the Shell Petroleum Corporation at Houston, Tex.

HARRY G. PARRISH, general manager of Union Oil Co. service stations in British Columbia and Alberta, visited Edmonton recently.

CAMPBELL HUNTER of London, England, is in Calgary, Alberta, in connection with operations of the Hunter Valley Oil Company in that province.

MORGAN DEAN and associates of Windsor, Ontario, recently made an inspection of the Dover gas field in Kent County.

ERNEST A. HANSON, deputy supervisor, U. S. Geological Survey, Roswell, N. Mex., was a Tulsa visitor last week.

C. E. BYERS, vice president of the Plymouth Oil Company, San Antonio, spent several days in Corpus Christi last week.

RICHARD MILLER has returned from Petrolia to Orangeville, Ontario, where he is drilling for the Hockley Valley Oil Co.

JOHN T. O'NEIL, of the Santa Clara Oil Company, San Antonio, is in California on a short vacation. He plans to return this week.

BURT E. HULL, president of the Texas Pipe Line Company at Houston, returned from a business trip through the Mid-Continent area.

ROY L. GINTER, Ginter Chemical Laboratory, Tulsa, and MRS. GINTER will leave on Friday for a two-weeks' trip to visit Mr. Ginter's parents in California.

E. L. SEMPLE, of the Oklahoma Pipe Line Company, will leave on a two-weeks vacation trip to be spent near San Antonio and other points in Southwest Texas.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

John D. Rockefeller's recent donation of $10,000,000 to the University of Chicago brings his gifts to that institution up to the magnificent sum of $35,000,000.

The manufacture of gasoline from natural gas is becoming a real industry in West Virginia and has resulted in reviving old leases in that state. The product is called casinghead gasoline and is made from richly saturated gas.

Jo P. Cappeau, of Pittsburgh, Pa., after concluding a survey of two South American countries for oil possibilities, is now in Europe on a similar mission. He represents American clients who wish to get in on the ground floor.

20 YEARS AGO

W. G. Carroll, veteran oil field supply man, dies in Chicago of heart failure on December 14. With his brother, R. W. Carroll, he was known to Eastern and Lima oil men.

The first big well in the Eldorado-Augusta field in Butler County, Kansas, was completed this week by the Mid-Kansas Natural Gas Company at a total depth of 2,500 feet on the J. C. Varner farm in SW NE section 17-28-4. It started at 1,500 barrels per day.

Van H. Manning, of the U. S. Bureau of Mines, estimates that $50,000,000 worth of natural gas was wasted in oil operations in the past year. The Cushing field operators in Oklahoma were among the main offenders.

10 YEARS AGO

Magnolia Petroleum Company discovers Wilcox sand in the SW SW section 5-7-8, Wewoka pool, Seminole County, Oklahoma, the well starting at 150 barrels per hour, giving hope to Seminole County lease owners that the county will develop into a big Wilcox-sand oil region. The Wewoka pool was opened in the Dutcher sand series in March, 1923.

Applying back pressure to flowing oil wells is a new departure in production methods and has been found successful as a gas conservation measure. It was suggested several years ago by Messrs. Swigart and Bopp of the Bureau of Mines, but the industry was slow in adopting it.

PARAGRAPHS

CHESTER W. WASHBURNE, consulting geologist of New York City, is spending some time in Texas on business.

E. W. GILDART, president, and A. W. LEWIS, vice president, of the Norvell-Wilder Supply Company, are spending some time in Tulsa.

J. B. BOND, producer and contractor of Longview, Tex., and a personal friend of the late Will Rogers, has accepted the district chairmanship of the East Texas oil counties for the Will Rogers Memorial campaign.

FREEMAN W. BURFORD, Dallas, president of the East Texas Refining Company, has been appointed director of the Texas Safety Council by GOV. JAMES V. ALLRED of Texas. He is also a colonel on the governor's staff.

CLYDE ROBINSON, petroleum engineer for Gulf Production Company; RALPH NICHOLS, representative for Black, Sivalls & Bryson, Inc., and E. A. WAHLSTROM, petroleum engineer for Stanolind Oil & Gas Company, all of Fort Worth, Tex., have returned from a successful deer hunt in the hills near Austin, Tex.

J. L. SHOEMAKER, auditor for the Stanolind Pipe Line Company, has returned from a visit in the East.

R. B. TANSEL, of Tulsa, president of the Tansel Petroleum Corporation, is in Minneapolis, Minn., on business.

R. W. HAMILTON, production engineer for the Shell Petroleum Corporation at St. Louis, is here on temporary business.

C. T. BERGESON, general auditor for Standard Oil Company of Indiana, spent several days in the Tulsa Stanolind offices last week.

R. R. ONEIL, in the scouting department of the Shell Petroleum Corporation at Houston, was promoted to a scout. He succeeds BILL ROGERS, who resigned to enter into business for himself.

WALLACE E. PRATT, vice president of the Humble Oil & Refining Company, addressed the Houston Kiwanis Club at its weekly luncheon last week on the subject "Why Control Production of Oil?"

DR. R. R. MORSE, head of the exploration department, and F. W. BARTLETT, geologist, both with the Shell Petroleum Corporation at Houston, made a tour of inspection through Coastal Louisiana in the past week.

R. A. BROOMFIELD, executive vice president of Barnsdall Oil Company; JAMES W. McKINNEY, of Sovereign Oil Company; J. E. BARNEBERG, of the Obispo Oil Company; A. T. JERGINS, of the A. T. Jergins Trust; J. B. WELLS, of Snook & Wells; WALTER CAMERON, of the Whepley Oil Company; DANA HOGAN, of the Hogan Petroleum Company, and THOMAS W. McMANUS, of the McManus Oil Company, have been elected members of the board of directors of the San Joaquin Valley Oil Producers Association.

J. A. MORGAN, well known in the natural gas and oil field equipment trade, who has been connected with the Anchor Burner Company of Oklahoma City, is now representative in Tulsa of the Marion Machine Foundry & Supply Company.

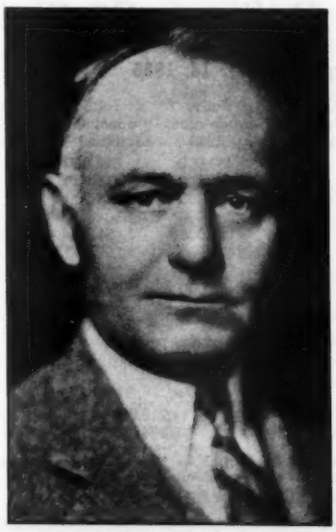
A. S. RITCHIE, McPherson Drilling Company, McPherson, Kans.; T. J. HAMILTON, Phillips Petroleum Corporation, Great Bend, Kans.; L. W. McLEOD, Westinghouse Electric & Manufacturing Company, Wichita, Kans., and G. A. HOLLOWAY of L. C. Moore Company, Wichita, Kans., part of the program committee for the Mid-Continent District Production Division of A.P.I. February meeting to be held in Wichita, Kans., were in Tulsa and Oklahoma City last week making arrangements for features for the technical meetings. The other members of this committee are F. E. FLOYD, Carter Oil Company, and JOHN T. HAYWARD, Barnsdall Oil Company, Tulsa.

A. G. LEVY, petroleum engineer for the Texas Company at Houston, Tex., was chosen chairman of the Gulf Coast Chapter of the American Petroleum Institute Division of Production at its regular meeting last week. W. S. CRAKE, engineer for Shell Petroleum Corporation at Houston, was elected first vice chairman, and S. S. PARKER, division manager of the Doheny Stone Drill Company, was elected second vice chairman.

A. W. WEEKS, geologist for the Shell Petroleum Corporation, Houston, Tex., is in Wichita Falls opening a geological department for the company's newly opened district office in that city.

Was Yale Halfback Too

If Arthur F. Corwin, director of the Socony-Vacuum Oil Company, Inc., and a member of the company's executive committee, wanted to do a little pointing with pride, he wouldn't have to restrict himself to the high place he has reached in the oil industry. He played halfback on the Yale football teams of 1888 and 1889, with a year on the freshman team besides. He graduated from Sheffield Scientific School of Yale University in 1889.



ARTHUR F. CORWIN

Soon after his graduation Mr. Corwin went to work in a machine shop of the South Penn Oil Company in Mannington, W. Va., and later he was a roustabout on drilling wells in that section. He has been working on some job in the oil business ever since. He was employed for a time as a laborer by the Carter Oil Company and later was a foreman for the Forest Oil Company. Subsequently he became a superintendent for the South Penn Oil Company and from 1904 to 1914 he was general superintendent and director of that organization.

Mr. Corwin spent a short period in Mexico as vice president of the Penn Mex Company. In 1915 he rejoined the Carter Oil Company and he was president of the company in 1928 when he resigned to become a director of the Standard Oil Company of New York.

When the Standard of New York was merged with the Vacuum Oil Company Mr. Corwin continued as director of the merged companies now the Socony-Vacuum Oil Company, Inc. In 1934 he was elected to the company's executive committee, which directs the operations of widely flung domestic and foreign operations. Mr. Corwin devotes most of his time to the company's producing operations.

JOHN G. PUGH, of the Sun Oil Company offices in Dallas, visited the Sun offices in Tulsa last week.

GEORGE STREEBY, of Tulsa, manager of the Lewis Production Company, has returned from a tour of Southwest Texas fields.

J. U. STAIR, vice president in charge of production for the Shell Petroleum Corporation of California, is looking over the oil fields of Oklahoma.

WALTER B. HAISLUP, general sales manager, and JOHN L. WAMSLEY, of Tulsa, southwestern sales manager, of the Diamond Chain & Manufacturing Company, Indianapolis, Ind., are making a business tour of Oklahoma and Kansas.

G. J. LEE, Waterloo, Iowa, manager of tank car sales for Mid-Continent Petroleum Corporation in the company's northern sales division, was a recent Tulsa visitor. He was accompanied by JESS FIELDS, of the Northern Oil Company, Mason City, Iowa.

ALBERT C. RUBEL, manager of field operations, Union Oil Company, has been elected chairman of the executive committee of the advisory council of the College of Engineering, University of Southern California. Mr. Rubel succeeds FRANKLIN S. WADE, president of the Southern Counties Gas Company, for the customary two-year period. Other members of the council include ADDISON B. DAY, president and general manager, Los Angeles Gas & Electric Corporation; HAROLD B. DOOLITTLE, chief designing engineer, Southern California Edison Company; ROBERT E. HAYLETT, director of manufacturing, Union Oil Company; CARL A. HEINZE, consulting engineer, Los Angeles; MARTIN H. MOSIER, president, The Petroleum Company; FORD J. TWAITS, consulting engineer, and CARL B. WIRSCHING, consulting engineer.

Important Advances in Eastern Market With Probably Additional to Come

By C. O. WILLSON

NEW YORK, Dec. 16.—Important advances have materialized in eastern refinery markets over the past week with indications that additional upward adjustments, particularly at points which are below normal, will be made before the end of the year. The most important change which was effective December 12 was the one-fourth cent increase in tank car gasoline prices in New York and New England. This was accompanied by a .3 cent increase in posted dealer and retail prices in metropolitan New York. On the same date the gasoline tank car prices at Philadelphia were advanced one-fourth cent with a half cent advance in posted dealer and retail prices. Effective today the Socony-Vacuum Oil Co., Inc., and other major distributors advanced gasoline and service station prices one-half cent in Connecticut.

These changes mark a continuance of trend which has been under way over the past six weeks and indicates that by the end of the year motor fuel markets will be in better shape than any time in three years. The new tank car prices in New York harbor for New York and New England delivery are 6½ cents for middle octane U. S. Motor, 6¾ cents for 65 octane and above, 7¼ cents for the ethylized regular grades and 6½ cents for the low octane material. The latter grade is not generally quoted. Tank car prices for New Jersey delivery continue at the old prices which are one-fourth cent lower than those shown above. Barge prices as usual are one-fourth cent lower than the tank car quotations.

The advance in New York City dealer and service station prices came as a surprise to many in the trade and indicates that local marketing conditions are satisfactory despite the fact that general price levels are above those of the surrounding territory. Three sets of posted dealer and station prices apply in metropolitan New York where it is estimated that over 5 per cent of the motor fuel consumption of this country takes place.

In the boroughs of Manhattan, Bronx and Queens, the new prices are 15.55 cents posted dealer and 19.8 cents service station; prices in Brooklyn are 15.3 and 19.3 cents; and Staten Island, 15.05 and 18.8 cents. These prices include 4-cent state and 1 cent federal taxes. The net retail prices ranging from 13.8 to 14.8 cents are considerably higher than the average over the past four years, and it is said will place distribution in metropolitan New York on a generally profitable basis. Dealer margins here are wider than in the adjoining territory but the net back to refineries and water terminals on contracts is higher than the open tank car prices. It is said that the advances are particularly important in the commercial account business which is responsible for a large part of the gasoline gallonage.

With the half-cent advance in retail gasoline prices effective today in Connecticut the new prices on regular grade gasoline will be 16.5 cents at points which adjoin metropolitan New York. Across the Hudson River in New Jersey, the retail price is still 17 cents. These lower prices are in part due to the fact that the state gasoline tax in New Jersey is 3 cents and in Connecticut 2 cents. This disparity between New York City prices and those of adjoining territory has been in effect for several months. Ordinarily it would result in a shift in gallonage so that the New York prices would have to be reduced. While some gallonage has been lost the price developments of the past week indicate that sellers in New York City are not alarmed. Observers point to this situation as indicating the strength of the gasoline market which enables retailers to ignore lower prices in adjoining sections. It is predicted that within a few days gasoline and station price advances will materialize in New Jersey and states to the south. It is also felt that posted dealer and service station prices will advance at least an additional half cent in the remainder of the New England.

The only important subnormal point in this section now is the Buffalo area. The posted dealer there is still 12 cents with a service station price of 14 cents. The net prices are 7 cents and 9 cents, respectively, for the two markets. Based on the New York market the present tank car price in Buffalo should be around 7½ cents, and the dealer and station prices 4 to 5 cents higher. Buffalo has been a disturbed market center over the greater part of the past two years. It has been described as a "dumping ground" for gasoline which originates in the inland Pennsylvania refining area, the East Coast and the Great Lakes.

All classes of motor fuel sellers are greatly encouraged by price developments in recent weeks. Away from the urban centers there is large seasonal falling off in demand during the winter months. This small volume when accompanied by low prices means substantial losses to the distributing end of the oil business. It is now believed that the better price situation will place operations on a more profitable basis than they were during the summer months at many points.

The export gasoline market is quiet with prices at the Gulf firm. Italy has made inquiries for several products for January and February delivery and is particularly anxious to secure a part cargo shipment of fighting grade aviation gasoline. It is reported in the trade that sellers are reluctant to quote on the aviation material due to the continued uncertaintly as to what the attitude of this country and others which are members of the League of Nations will be in regard to oil shipments to Italy after the first of the year. Certain exporting companies will not quote on any open market material for shipment to Italy at this time. This includes companies which are continuing to make shipments on orders previously placed and those making regular deliveries to subsidiary or affiliated companies operating in Italy.

It is also true that certain companies will continue to quote Italy on her open market inquiries with the possible exception of the aviation gasoline which is for delivery in the war area. In making quotations sellers, of course, assume that Italy will be able to make satisfactory cash payments. It is known that at least two of the major companies have had inquiries from Italy which involve large quantities for delivery in 1936 and include extension of credit on part of the shipments. It is said that American companies and large oil companies in other countries have refused to consider this business. The nominal price on 64-66, 375 at the Gulf is 5¾ cents. The Gulf price on 65 plus octane material for coastwise shipment has advanced to 5⅝ cents with little material available.

Other Products

Except for gasoline this market was featureless over the past week. Some sellers are not certain that the new tank car 5¼-cent prices for kerosene, range oil and No. 1 furnace oil can be maintained unless there is a quick improvement in demand. It is said that two or three of the smaller tank car sellers are still taking orders at the old 5-cent price although all of the major refineries have advanced to the 5¼-cent posting. One refiner said that jobbers of these products have postponed buying these products in order to have their inventories low at the close of the year. He predicts a much better tank car movement after the first of the year. Steam refined, bright stock and neutral oil prices are steady.

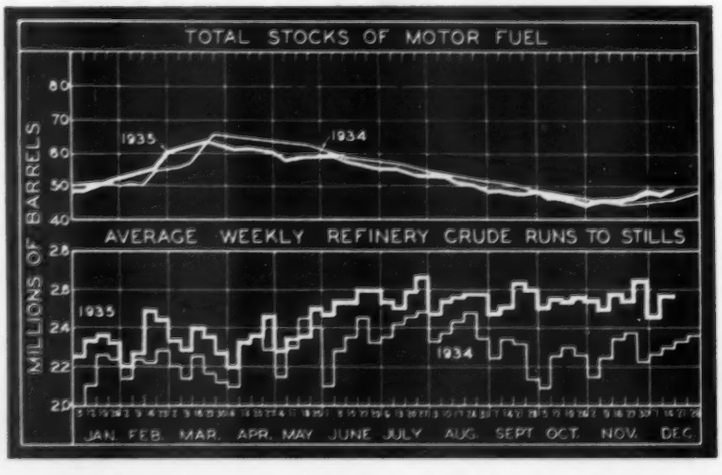
A. P. I. Weekly Refinery Statistics

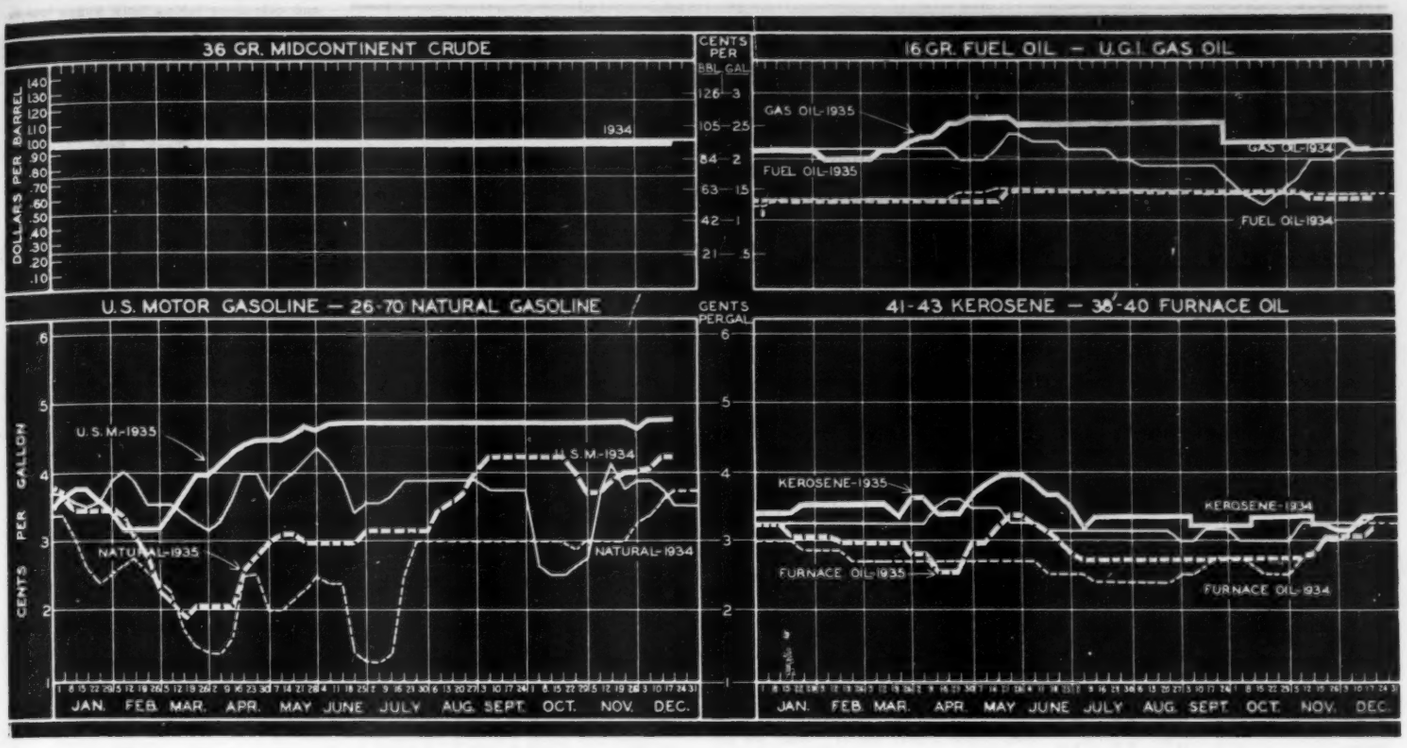
Week Ending December 14, 1935

	Capacity reporting per cent	Daily crude runs (bbls.)	Total gasoline (bbls.)	Gas oil and fuel oil (bbls.)
East Coast	100.0	460,000	13,027,000	10,522,000
Appalachian	94.8	109,000	2,140,000	921,000
Indiana, Illinois, Kentucky	95.9	356,000	8,043,000	3,383,000
Oklahoma, Kansas, Missouri	84.8	250,000	5,304,000	4,395,000
Inland Texas	48.5	88,000	1,451,000	1,645,000
Texas Gulf	96.8	570,000	6,295,000	11,077,000
Louisiana Gulf	96.4	130,000	1,339,000	4,502,000
North Louisiana and Arkansas	90.0	50,000	279,000	561,000
Rocky Mountains	61.9	33,000	902,000	744,000
California	92.6	534,000	10,832,000	66,716,000
Total United States	89.6	2,580,000	49,612,000	104,466,000

Stocks (barrels)—	Dec. 14, 1935	Dec. 15, 1934
Finished gasoline	44,218,000	41,760,000
Unfinished gasoline	5,394,000	5,047,000

NOTE: In addition to above there are stocks classified as "Stocks of other motor fuel." These stocks total around 5,500,000 bbls., but show only minor changes and are not included in this weekly summary.





Market Is Quiet in Group 3 Territory But All Price Changes Are Upward

By T. F. SMILEY

The late December lassitude in refined oil tankcar markets, taken pretty much as a matter of course, was beginning to appear in the Group 3 area this week. It did no damage to quotations. On the contrary, the few changes were upward.

Gasoline was steady at the price level which, except for a brief attack of nerves in the opening days of this month, has ruled since last June. The general desire to have low inventories at the close of the year is likely to prevent all but really necessary buying until January. With the turn of the year, however, a rise in both spot purchases and instructions on contracts is expected.

Marketing Methods Change

The distinctly improved gasoline market prevailing now as compared with the one over which refiners and their sales departments were worrying 12 months ago is attributed in no small measure to a change in the approach to the whole marketing problem seen in many of the large integrated companies. It formerly was a common thing for the producing and pipe line departments to direct their energies toward the production and transportation of more and still more oil. By a specious sort of reasoning it was figured that the greater the volume of oil produced, the larger would be the profits. The refining division set itself to the task of making the best showing possible by converting the flood of oil into gasoline and other products. Then the whole distracting problem of disposing of the gasoline was tossed into the lap of the tankcar sales manager.

The sales manager tried to sell at a profit, but whether there was a profit or not he had to sell, and he had to do it in competition with other sales managers who faced the same mad situation. The result? Well, just as an example, third-grade motor fuel shipped out of Group 3 was sold at the pump in St. Louis, Mo., at 9½ cents a gallon. As freight of 2 cents, a dealer's margin of 4 cents and tax of 3½ cents totaled precisely 9½ cents, it looks as though the refiner not merely gave his gasoline away, but actually went into the red just for the sheer joy of making other persons happy. Instances could be multiplied, and in some cases even more amazing marketing practices were reported.

Long Step Taken

A long step toward rational business methods has been taken since then. Both producing and refining operations have been curtailed to a point which brings gasoline output within speaking distance of demand.

Natural gasoline was fairly firm, though, like the refined material, it was feeling the subduing influence of the year's end now close at hand. Export business has been good throughout the last month and inquiries are still coming in. Further postponement of federal court action on the Texas law upon which operation or closing of plants in the Texas Panhandle depends has extended the period of uncertainty facing the trade.

Smaller Price Drop Expected

In former years late December and the early weeks of the new year saw a sharp drop in natural gasoline. Last year that course was followed in a modified form. The present season is expected to witness even less subsidence in tankcar prices. The market structure is on a firmer foundation. Also manufacturers, refiners and jobbers have been looking ahead and seeing to it that they accumulated no unwieldy stocks.

Reasons for the sluggish market in kerosene are somewhat obscure. One supposition is that many refiners, recalling how Gulf Coast prices for this material soared last year, put a larger quantity than usual into storage, and that current demand is not moving it as fast as desired.

Furnace oils were livelier, with prices up an eighth, largely the result of demand on the part of buyers who elected not to build up stocks in the period of low prices, on account of insurance, capital tie-up and market uncertainties.

Neutrals and bright stocks continued firm. Wax was vigorous and a sold-up condition was evident. One foreign buyer, searching for material and finding a refiner cleaned out, asked the names of those who had bought the material, hoping he might be able to get some from them. Comment was stirred by unexpected inquiries for petrolatum.

Refined Oil Market Barometer

Although wholesale buying of gasoline and some other oil products is tempered by the desire to have low inventories at the close of the year, the refined markets in most areas were notably firm this week, with expectations of enlivened trade after the opening of the new year. Furnace oil demand has quickened with the arrival of wintry weather.

MID-CONTINENT. Gasoline firm. Furnace oils up. Natural steady. Kerosene slow.

EAST COAST. Tankcar and retail gasoline stronger, with markets better than in years.

GULF COAST. General market strong with no change in prices.

CALIFORNIA. Demand for natural and heating oils improved. Smudge oil active in citrus belt.

CHICAGO. Gasoline strong. Heating oils active and tending slightly higher.

PENNSYLVANIA. Market generally dull. Kerosene strong. All prices unchanged.

RETAIL OIL MARKETS

Tank wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of December 17, 1935

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Discounts

Under the standard form of commercial consumer contract which went into effect March 1, 1934, save in California, Oregon, Washington, Arizona and Nevada, a discount of 1 cent a gallon off tank wagon or 3 cents a gallon off retail prices is permitted for purchases between 4,000 and 10,000 gallons per month, or 4 cents a gallon off retail prices for purchases in lots of more than 10,000 gallons a month. The minimum delivery is 25 gallons.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Chicago	14.0	16.0	4.0	9.8
Decatur, Ill.	15.5	16.5	4.0	9.8
E. St. Louis	15.2	17.2	4.0	9.5
Joliet	15.5	16.0	4.0	9.8
Peoria	15.5	15.5	4.0	9.8
Quincy	15.3	17.3	4.0	8.0
Davenport, Ia.	15.6	(†)	4.0	9.8
Des Moines	15.3	(†)	4.0	9.6
Mason City	15.7	(†)	4.0	10.0
Sioux City	15.5	(†)	4.0	8.0
Duluth, Minn.	16.3	18.3	4.0	10.6
Mankato	15.9	17.9	4.0	10.2
Minneapolis	15.9	17.9	4.0	10.2
LaCrosse, Wis.	16.9	18.9	5.0	10.2
Green Bay	17.2	19.2	5.0	10.5
Milwaukee	15.3	16.8	5.0	10.1
Madison	16.9	18.9	5.0	10.2
Detroit, Mich.	13.5	15.5	4.0	9.3
Grand Rapids	15.6	15.6	4.0	8.0
Saginaw	16.1	18.1	4.0	9.3
Evansville, Ind.	17.2	19.2	5.0	10.3
Indianapolis	17.4	19.4	5.0	10.5
South Bend	17.6	19.6	5.0	12.0
Fargo, N. Dak.	16.9	18.9	4.0	11.2
Huron, S. Dak.	17.4	19.4	5.0	10.7
Sioux Falls	16.9	18.9	5.0	10.2
Kan. City, Mo.*	14.9	16.9	4.0	7.0
Springfield	14.6	16.6	4.0	8.9
St. Louis	15.2	17.2	3.5	9.5
St. Joseph*	14.9	16.9	4.0	8.2
Wichita, Kans.	14.4	16.4	4.0	6.8
Bartlesville, Ok.	16.0	18.0	5.0	8.5

*State tax 2 cents, 1-cent city tax and 1-cent federal tax.

†Standard Oil Co. (Indiana) has leased all service stations in Iowa.

Discounts to dealers: Undivided accounts, 1½ cents on premium and regular and 2½ cents on third grade off service station prices; divided accounts one-half cent less than undivided. Discounts to dealers in metropolitan Chicago one-half cent larger than rest of Standard of Indiana territory, namely 4 cents and 3 cents on respective grades. Where prices are more than 1 cent below normal, the discounts are one-half cent less than above.

Stanolax Furnace Oil in Chicago

Effective June 27, 1935, f.o.b. Chicago tank wagon prices: Range oil, less than 100 gallons, 8.5 cents; 100-149 gallons, 7.5 cents; 150 gallons and more, 7.0 cents. No. 1 (36-40 lt. stw. zero), less than 100 gallons, 8.5 cents; 100-149 gallons, 7.5 cents; 150 gallons or more, 7.0 cents; No. 2 (30-34 stw. zero), same prices and quantities as No. 1; No. 2 (22-26, zero), less than 150 gallons, 7.2 cents; 150 gallons or more, 6.2 cents. No. 4 (12-15 zero) less than 400 gallons, 7.2 cents; 400 gallons or more, 6.2 cents. viscosity of No. 4, 95° and 100° F.: No. 5, less than 400 gallons 5½ cents; 400 gallons or more 4½ cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Denver, Colo.	18.0	20.0	5.0	11.0
Pueblo	18.0	20.0	5.0	13.0
Grand Junction	20.5	22.5	5.0	15.0
Casper, Wyo.	18.5	20.5	5.0	11.5
Cheyenne	18.5	20.5	5.0	13.0
Butte, Mont.	21.0	23.0	6.0	17.5
Billings	19.5	21.5	6.0	16.5
Helena	21.5	23.5	6.0	17.5
Great Falls	20.5	22.5	6.0	17.5
Salt Lake, Utah	16.0	18.0	5.0	16.0
Twin Falls, Ida.	22.0	25.0	6.0	18.0
Boise	22.5	24.5	6.0	18.0
Albu'que, N. M.	20.0	22.0	*6.5	13.0

*One-half cent city tax.

Discount to dealers with or without contract in Continental territory: Undivided dealer discount off service station price, 4 cents; divided dealer accounts, 3½ cents.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Atlanta, Ga.	21.0	23.0	7.0	*13.0
Augusta	20.5	22.5	7.0	*13.0
Macon	20.5	22.5	7.0	*13.0
Savannah	18.5	20.5	7.0	*13.0
Birm'ham, Ala.	21.5	23.5	8.0	12.0
Mobile	20.5	22.5	8.0	10.0
Montgomery	22.0	24.0	9.0	15.5
Jackson, Miss.	19.5	21.5	7.0	*11.0
Vicksburg	19.0	20.5	7.0	*12.0
Jacksonville, Fla.	19.0	21.0	8.0	10.0
Miami	19.0	21.0	8.0	13.5
Pensacola	19.75	21.0	8.0	11.5
Tampa	19.0	21.0	9.0	10.0
Lexington, Ky.	19.5	21.5	6.0	11.0
Covington	18.0	20.0	6.0	10.5
Louisville	18.5	20.5	6.0	10.0
Paducah	18.5	20.5	6.0	10.0

*Includes 1 cent state tax in addition to the state tax of 6 cents. Montgomery, Ala., has a county tax of 1 cent per gallon and a city tax of 1 cent per gallon on gasoline, and 1 cent per gallon on kerosene. Mobile and Birmingham, Ala., each have a city gasoline tax of 1 cent per gallon. Pensacola, Fla., has a city gasoline tax of 1 cent.

Southwestern District

MAGNOLIA PETROLEUM CO.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Dallas, Tex.	15.0	17.0	5.0	7.0
Fort Worth	15.0	17.0	5.0	7.0
Houston	15.0	18.0	5.0	8.0
San Antonio	16.0	18.0	5.0	* *
El Paso	18.0	20.0	5.0	10.0
Muskogee Ok.	16.0	18.0	5.0	7.0
Okla. City	16.0	18.0	5.0	8.0
Tulsa	16.0	18.0	5.0	8.0
Ft. Smith, Ark.	15.0	18.5	5.0	8.0
Little Rock	17.5	21.0	7.5	9.5
Texarkana	15.5	17.5	5.0	8.0

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Atl'tic City, N. J.	13.8	17.3	4.0	9.0
Newark	13.8	17.3	4.0	7.5
Annapolis, Md.	15.1	18.6	5.0	10.0
Baltimore	14.5	18.0	5.0	7.5
Cumberland	16.1	19.6	5.0	12.7
Wash'g'n, D. C.	12.5	16.0	3.0	9.0
Danville, Va.	16.9	20.4	6.0	12.9
Norfolk	15.4	18.9	6.0	11.2
Petersburg	16.1	19.6	6.0	11.7
Richmond	12.5	17.3	6.0	11.7
Roanoke	17.1	20.6	6.0	12.9
Charles'n, W. Va.	15.3	18.8	5.0	12.6
Parkersburg	14.6	18.1	5.0	11.2
Wheeling	14.5	18.0	5.0	12.2
Charlotte, N. C.	18.2	21.7	7.0	12.9
Hickory	18.5	22.0	7.0	13.1
Mt. Airy	18.5	22.0	7.0	13.2
Raleigh	17.9	21.4	7.0	12.7
Salisbury	18.2	21.8	7.0	13.0
Charleston, S. C.	16.5	20.0	7.0	11.3
Columbia	17.8	21.3	7.0	12.6
Spartanburg	18.2	21.7	7.0	12.9

Tank wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at regular price less one-half cent. Discount for kerosene, 1 cent off tank wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except in New Jersey, where no discount (if necessary) is given.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Omaha	17.9	19.9	6.0	10.1
McCook	18.6	20.6	6.0	10.8
Norfolk	18.3	20.3	6.0	10.5
North Platte	18.7	20.7	6.0	10.9
Scottsbluff	19.4	21.4	6.0	11.6

Note: Discounts to dealers; where service station gasoline prices are (maximum overall, including rent) as follows: Reliance, 2½ cents; Standard Red Crown, 3½ cents; Red Crown Ethyl, 3½ cents.

Where service station gasoline prices are below normal resellers' allowances are reduced one-half of the amount below normal, down to the following (minimum overall, including rent): Reliance, 2 cents; Standard Red Crown, 3 cents; Red Crown Ethyl, 3 cents. Discounts to consumers for tank wagon deliveries covered only by Standard Commercial Consumers Contract, effective January 1, 1935.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Ohio points	17.0	19.6	5.0	*12.5

*Includes state tax of 1 cent.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Philadelphia, Pa.	16.0	18.0	5.0	9.0
Pittsburgh	17.0	19.0	5.0	10.0
Allentown	16.5	18.5	5.0	9.0
Erie	16.0	18.0	5.0	8.0
Scranton	16.5	18.5	5.0	10.0
Altoona	17.0	19.0	5.0	9.0
Dover, Del.	16.5	18.5	5.0	10.0
Wilmington	16.0	18.0	5.0	9.0
Springf'd, Mass.	13.5	17.0	4.0	7.25
Worcester	13.5	17.0	4.0	7.5
Hartford, Conn.	13.5	17.0	4.0	6.75
New Haven	13.5	17.0	4.0	7.0
Providence, R. I.	12.5	16.0	3.0	7.0

Note—Tank wagon prices are those applicable to consumers purchasing lots of 100 or more gallons in one delivery.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
N. Orleans, La.	18.0	21.5	‡8.0	12.0
Baton Rouge	17.0	20.5	†7.0	11.5
Alexandria	18.0	21.5	†*8.0	10.5
Lafayette	18.5	22.0	†*8.0	12.5
Lake Charles	18.5	22.0	†*8.0	†11.0
Shreveport	16.5	20.0	†7.0	9.0
Knoxville, Tenn.	20.5	24.0	8.0	14.0
Memphis	18.5	22.0	8.0	9.5
Chattanooga	20.0	23.5	8.0	11.5
Nashville	19.5	23.0	8.0	10.0
Bristol	18.35	21.1	8.0	14.5

*Includes city tax of 1 cent.

†Includes 1-cent parish tax. ‡Includes 2 cent parish tax.

Tank wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at dealer price less one-half cent.

Louisiana kerosene prices include 1-cent state tax.

New York and New England

SOCONY-VACUUM CO., INC.

	Gasoline Post deal	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Albany, N. Y.	14.5	18.0	5.0	7.75
*Met. New York	15.55	19.8	5.0	7.25
*Br'kl'n, Queens	15.3	19.3	5.0	7.25
Buffalo	12.0	14.0	5.0	8.0
Rochester	15.5	16.0	5.0	8.0
Syracuse	15.0	18.5	5.0	8.5
Boston, Mass.	13.5	17.0	4.0	7.0
Portland, Me.	15.0	18.5	5.0	7.75
Manch'ter, N. H.	15.0	18.5	5.0	8.0
Burlington, Vt.	16.5	20.0	5.0	8.75

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
San Francisco	14.0	16.0	4.0	10.0
Los Angeles	13.5	15.5	4.0	10.5
Fresno, Calif.	14.5	16.5	4.0	9.0
Phoenix, Ariz.	18.0	20.0	6.0	‡16.0
Reno, Nev.	17.0	19.0	5.0	13.0
Portland, Ore.	16.5	18.5	6.0	13.5
Seattle, Wash.	16.5	18.5	6.0	13.5
Tacoma	16.5	18.5	6.0	13.5
Spokane	19.5	21.5	6.0	16.5

*Retail prices posted by Standard Stations, Inc., a subsidiary.

†Prices are at company's plant or depots, as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where discount is 1 cent.

‡Includes 5-cent state tax.

Canada*

Imperial 3-Star Gasoline

IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
Hamilton, Ont.	21.0	23.5	6.0	16.5
Toronto, Ont.	21.0	23.5	6.0	16.5
Brandon, Man.	30.3	33.3	7.0	21.3
Winnipeg, Man.	28.7	31.7	7.0	20.3
Regina, Sask.	30.0	33.0	7.0	21.5
Saskatoon, Sask.	32.8	35.8	7.0	24.3
Edmonton, Alta.	32.2	35.2	7.0	23.7
Calgary, Alta.	29.5	32.5	7.0	21.0
Vancouver, B. C.	26.0	29.0	7.0	24.0
Montreal, Que.	20.5	23.0	6.0	.
St. John, N. B.	26.0	30.0	8.0	19.5
Halifax, N. S.	26.0	30.0	8.0	19.5

*Imperial gallon used in Canada.

In maritime provinces all dealers get 4 cents off service station price. In all other provinces open dealers get 3 cents off service station price and 1 cent additional to 100 per cent accounts, except Montreal City, Hamilton and Toronto, where open dealers get 2½ cents off service station price with 1 cent additional to 100 per cent accounts.

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gallon lots if covered by contract.

Retail Price Changes

Standard Oil Co. (Indiana) December 4 reduced tank wagon kerosene 1 cent in St. Joseph.

Magnolia Petroleum Co. December 13 advanced tank wagon and station gasoline 1 cent in El Paso.

Socony-Vacuum Oil Co., Inc. December 12 advanced posted dealer and station gasoline .3 cent in metropolitan New York, Brooklyn and Queens.

Nations of the World Oil Exhibit Planned

Oil men and official representatives from the oil-producing nations of the world outside of the United States will be special guests at the ninth International Petroleum Exposition in Tulsa next May 16 to 23, according to W. G. Skelly, president.

Each oil-producing nation is being invited to send an exhibit showing geological maps of its territory and the methods of producing, transportation, refining and marketing of oil within its bounds. Free space is being granted and a special structure will be erected to house this "nations of the world oil exhibit."

"This exhibit will give the delegates of the 15 to 25 foreign nations which usually attend the exposition an opportunity to exchange ideas and get an up-to-date picture of the world oil situation," Mr. Skelly said.

Countries invited to show exhibits are: Rumania, Poland, Russia, Venezuela, Colombia, Argentina, Trinidad, Peru, Persia, India, Dutch East Indies, Mexico, Ecuador, Bolivia, Japan, Sakhalin (Asia), British Borneo, Iraq, Egypt, Canada and the United States.

John Healy, of the third generation of Healys in the oil business, now located at Abilene, Tex., is visiting his parents, Mr. and Mrs. W. J. Healy, of Bradford, Pa. He was accompanied home by Robert George, of Wichita, also a member of a well-known Pennsylvania oil family.

PRICES ON REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 17, 1935

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
Below 63 octane	.04¾	.04⅞
63-70 octane	.05⅝	.05⅝
60-62 400 grade:		
Below 63 octane	.04¾	.04⅞
63-70 octane	.05⅝	.05⅝
64-66 375	.04⅞	.05
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
Below 63 octane		.04¾
63-70 octane	.05⅝	.05⅝
60-62 400	.04¾	.04⅞
64-66 375	.04⅞	.05

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:	
Below 63 octane	.05½
63-70 octane	.06¼
60-62 400	.05½

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:	
Below 63 octane	.05½
63-70 octane	.06¼

CHICAGO (based on Group 3)—

U. S. Motor grades:		
Below 63 octane	.04¾	.04⅞
63-70 octane	.05⅝	.05⅝
60-62 400	.04¾	.04⅞
64-66 375	.04⅞	.05
68-70 360	.05	.05⅛
Aviation fighting grade	.05⅝	.06

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:	
Below 60 octane	.05¼
60-64.9 octane	.06⅜
65-70 octane	.07
64-66 375	.05⅝
68-70 350	.05⅝

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.05	.06
58-60 400	.05⅝	.06

EAST COAST—

U. S. Motor, below 60 octane:	
*New York (Bayonne)	.06¼
Baltimore	.06
U. S. Motor, 60-64.9 octane:	
*New York (Bayonne)	.06½
Philadelphia	.06½
Boston	.06½
Baltimore	.06¼
Charleston, S. C.	.06¼
U. S. Motor, 65 and above:	
*New York (Bayonne)	.06⅝
Philadelphia	.06⅝
Boston	.06⅝
Baltimore	.06½
Charleston, S. C.	.06½

*All grades of gasoline one-fourth cent less for barge shipments. The above New York harbor prices are for New York state and New England delivery. For delivery in New Jersey and other points the prices are one-fourth cent less.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05¼	.05⅝
60-64.9 octane	.05⅝	.05⅝
65 octane and higher	.05⅝	.05⅝

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.05⅛
52-54 450 (blending)	.05⅛
54-56 450 (blending)	.05⅛

CHICAGO (based on Group 3)—

50-52 450 (blending)	.04¾	.05
Cleaners' naphtha, 56-58 gr., 200 i.b.p., 20 e.p.	.06⅜	.07
Lacquer diluent, 180 i.b.p., 250 e.p.	.07⅞	.08
Lacquer diluent, 140 i.b.p., 200 e.p.	.08⅞	.09
Rubber solvent, 68-70 gr., 100 i.b.p., 300 e.p.	.06⅜	.07
Stoddard solvent, 300 i.b.p., 410 e.p., over 83° flash	.06⅜	.06½
Pet. thinner, 200-300 i.b.p., 410 e.p., over 83° flash	.06⅜	.06½
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p., 330° e.p.	.06⅞	.07
Petroleum spirits	.05⅞	.06

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70	.04¼
Grade 18-55	.06
Low vapor pressure grade:	
*14 lb. c.p. (max.)	.05¼ .05⅝
*12 lb. v.p. (max.)	.05⅞ .06

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04½

NORTH TEXAS—

Grade 26-70		.04
Grade 18-55	.04⅜	.04⅞
*14 lb. v.p. (max.)	.05⅜	.05½
*12 lb. v.p. (max.)	.05⅝	.05⅝

CALIFORNIA—

75-85 375-390	.04¾	.05⅛

*Nominal.

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.03¼	.03⅝
42-44	.03⅜	.03½

NORTH TEXAS—

41-43	.03¼	.03½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

41-43	.04¼

PENNSYLVANIA (inland refineries)—

45	.04⅜
46	.04⅞
47	.05

CHICAGO (based on Group 3)—

41-43	.03¼	.03½
42-44	.03½	.03⅝

CALIFORNIA (Pac. Coast market)—

38-40 high burning test	.04	.05

NEW YORK (Bayonne, N. J.)—

*41-43	.05½

GULF COAST (domestic)—

41-43	.04¼	.04½

*Barge price one-eighth cent lower.

Petroleum Coke

(Prices per ton f.o.b. Chicago area. Refineries absorb freight to 80 cents a ton.)

Pile run	6.25
Direct from still	7.25
Egg, nut, pea	8.00
Lump	8.75

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42		.03¼
No. 1 straw, 38-40	.03⅛	.03¼
No. 2 straw, 32-36	.03	.03⅛
No. 2 dark, 32-36	.02⅞	.03
No. 3, 28-32	.02¾	.02⅞
No. 3, 15 and above, 28-32	.02½	.02⅝

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅛	.03⅜
No. 1 straw, 38-40	.03⅛	.03¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03⅛	.03¼

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36	.03⅛
No. 3, 28-32	.03¼

CHICAGO (based on Group 3)—

No. 1 prime white, 38-40	.03¼	.03⅜
No. 1 straw, 38-40	.03⅛	.03¼
No. 2 straw, 32-36	.03⅛	.03¼
No. 2 dark, 32-36	.02⅞	.03
No. 3, zero to 15, 28-32	.02¾	.03
No. 3, 15 and above, 28-32	.02¼	.02½

NEW YORK (Bayonne, N. J.)—

*No. 1	.05⅛
*No. 2	.04¼
*No. 4	.04

*Barge deliveries one-eighth to one-fourth cent under above tank car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅛	.02¼
No. 4, 24-28	.87½	.90
No. 4, 15 and above, 24-28	.75	.80
No. 5	.70	.75
No. 6	.65	.67½
Below 18 fuel oil, industrial	.60	.65

NORTH TEXAS—

U.G.I. gas oil	.02⅛	.02¼
No. 4, 24-28	.87½	.90
No. 5	.70	.75
No. 6	.65	.67½
Below 18 fuel oil, industrial	.60	.65

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U.G.I. gas oil	.02⅝	.03
10-14 fuel oil, industrial	.75	.80

ARKANSAS (Ark., N. La., Miss. del.)—

10-14 fuel oil, industrial	.60	.65

CHICAGO (based on Group 3)—

U.G.I. gas oil	.02¼	.02⅝
No. 4, 24-28	.87½	.90
No. 4, 15 and above, 24-28	.72½	.77½
No. 5, 18-22	.62½	.67½
No. 6, 10-16	.52½	.57½

Fuel oils of more than 40 cold test generally 5 to 15 cents per bbl. in these areas.

PENNSYLVANIA (inland refineries)—

36-40	.04½	.04¼

CALIFORNIA—

Los Angeles:

30-34 gas oil, per bbl.	1.10	1.25
27 plus diesel	1.10	1.25
27 plus diesel (bunkers)	1.25	1.30
12-16 (bunkers at tidewater)	.87	.95
10-16 (cargo lots)	.80	.90
12-17 (tank cars)	.60	.95
San Joaquin Valley:		
10-18 (tank cars)	.60	.75
San Francisco:		
27 plus diesel, per bbl.		1.25
27 plus diesel (bunkers)		1.35
10-16 (bunkers)		1.00

GULF COAST—

28-30 gas oil	.03¼
28-30 diesel (bunkers)	1.70
Bunker C (bulk cargoes)	.70 .75
Bunker C (bunkers)	.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil	.04	.04¼
28-30 diesel (lighterage 6¼ plus per bbl.)		1.65
28-30 diesel (tank cars)		.04¼
*Bunker C (to ocean-going ships in N. Y. harbor)		.95
Industrial fuel (tank cars)		.03⅞

*Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:	
190-200 D, 15-25	.20
150-160 D, 0-10	.17
150-160 D, 15-25	.16½
150-160 E, 15-25	.16
100-110 D, 0-10	.15¾
Steam refined:	
630 green (treated)	.09½
600 light green, untreated	.08½

PENNSYLVANIA—

600 dark green, untreated	.05	.06
Bright Stocks (Pennsylvania grade, No. 8 color, 145-50 at 510; 540-550 flash):		
10 pour test	.22	.22½
15 pour test	.21	.21½
20 pour test	.20	.20½
25 pour test	.19	.19½
Steam refined:		
600	.09½	.10
650	.11	.11½
600 Pennsylvania flash	.12	.12½
630 flash	.17	.17½
600 Warren E filtered	.13	.13½

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:	
150-3	.10
180-3	.11¼
180-4	.10¾
200-3	.11¾
200-4	.11¼
240-3	.13¾
240-4	.13¼
280-3	.14¾
280-4	.14
300-3½	.15¼
400-3½	.16
100-2 paraffin oil	.05¾
15-20 Cold Test:	
200-3	.10¾
200-4	.10¼
240-3	.12¾
240-4	.12¼
280-3	.13¾
280-4	.13

GULF COAST—

Pale Oils:		
200-3	.07	.07½
300-3	.07½	.08
500-3½	.08½	.09
750-3½	.09	.09¼
1,200-3½	.09½	.09¾
2,000-4	.09¾	.10
Red Oils:		
200-5-6	.07	.07¼
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08½	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)

Pale Oils:		
100-2½-3	.06¾	.07
200-2½-3	.07¼	.07½
300-3-3½	.09	.09½
400-3-4	.09½	.09¾
450-3-4	.09¾	.10
550-3-4	.10	.10¼
600-3-4	.10¼	.10½
Red Oils:		
200-4-5	.06¾	.07
300-5-6	.07¼	.07½
350-5-6	.07½	.07¾
400-5-6	.07¾	.08
450-5-6	.08	.08¼
500-5-6	.08¼	.08½
600-5-6½	.08½	.08¾
700-6½ plus	.08¾	.09
750-6½ plus	.09	.09½
900-6½ plus	.10	.10¾

PENNSYLVANIA—

150 vis. at 70° F., color, 400-405 flash:	
Zero pour test	.21 .21½
10 pour test	.20 .20½
15 pour test	.19½ .20
25 pour test	.18½ .19
180 vis. at 70° F., 3 color:	
25 pour test	.21 .21½
200 vis. at 70° F., 3 color:	
Zero pour test	.25½ .26
10 pour test	.24½ .25
15 pour test	.24 .24½
25 pour test	.23 .23½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.02⅝ .02½

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0235 .0240
124-126 (a.m.p.) w.c. scale	.0235 .0240

NEW YORK—

Wax in bags fully refined:	
125-125 (a.m.p.) wax	.0420
125-127 (am..p.) wax	.0430
128-130 (a.m.p.) wax	.0455
130-132 (a.m.p.) wax	.0480
133-135 (a.m.p.) wax	.0510
135-137 (a.m.p.) wax	.0565
124-126 (a.m.p.) w.s.	.0225
124-126 (a.m.p.) y.s.	.0220 .0225
Petrolatum in barrels, carload lots:	
Dark green	.01⅞
Amber	.02⅞ .03
Extra amber	.03 .03¼
Lily white	.06⅝ .06⅞
Snow white	.07⅜ .07⅞
Cream	.05⅝ .05⅞

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.05¼	.05⅜
60-62 400		.05½
61-63 390		.05⅝
64-66 375	.05⅝	.05¾

LOS ANGELES—

U. S. Motor grades:		
53-55 octane		.04
55-65 octane	.04	.04¼
65-67 octane	.04¼	.04⅜
67-69 octane	.04⅜	.04⅝
Above 69 octane	.04⅝	.05
58-60 400 endpoint	.04⅝	.05¼

KEROSENE

GULF COAST—

41-43 prime white		.03⅜
41-43 water white	.03⅜	.04
44 water white		.04¼

LOS ANGELES—

41-43 water white	.04¼	.04⅜

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.19½	.20
600 S.R. unfiltered		.16½
650 S.R. unfiltered	.17½	.18
600 flash S.R.	.18½	.19
630 flash S.R.	.23	.24
Bright Stocks:		
8 color	.26	.26½
6½ plus color in dilution		.25½

NEUTRAL OIL

200-3 color	.29½
150-3 color	.25

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 a.m.p.	.035	.03625
125-127 a.m.p.	.03625	.0375
128-130 a.m.p.	.03875	.0400
130-132 a.m.p.	.04125	.04250
132-135 a.m.p.	.04625	.04750
135-137 a.m.p.	.04875	.0500
Crude scale:		
124-126 w.s.	.0220	.0225
124-126 y.s.		.0220

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

Corsicana (heavy) (June 17, 1933)	.80
East Texas	$1.00
Other fields	(See gravity table)

West Texas

Crane Upton, Crockett, Howard, Glasscock, Mitchell (Sept. 29, 1933)	$ .70
Ector, Winkler and Pecos Counties and Lea County, New Mexico (Sept. 29, 1933)	.75
Pecos County, Yates shallow Pool (Sept. 29, 1933)*	.65
Jones and Fisher Counties*	(See gravity table)

Rocky Mountain States

Ilea, light, (Sept. 29, 1933)	$ .96
Ilea, heavy (Sept. 29, 1933)	.90
Florence, Colo. (June 17, 1933)	.90
Fcrt Collins and Wellington, Colo., (June 17)	(See Salt Creek prices)
Big Muddy (Sept. 29, 1933)	1.01
Frannie, light (May 1, 1934)	.70
Frannie, heavy (Sept. 29, 1933)	.62
Salt Creek and LaBarge (Sept. 29, 1933)	(See Stanolind Mid-Continent price schedule.)
Grass Creek, light (Sept. 29, 1933)	$1.18
Grass Creek, heavy (Sept. 29, 1933)	.62
Elk Basin (Sept. 29, 1933)	1.18
Rock Creek (Sept. 29, 1933)	1.02
Lance Creek (Dec. 16, 1932)	.92
Hudson (June 2, 1931)	.65
Lost Soldier (Sept. 30, 1932)	.88
Hamilton Dome, all grades (Feb. 16, 1935)	.57
Torchlight (Sept. 29, 1933)	1.18
Greybull (Sept. 29, 1933)	1.18
Pondera (Sept. 29, 1933)	1.25
Sunburst (July 19, 1935)	1.20
Cat Creek, Montana	1.07
Hogback (Sept. 29, 1933)	1.11
Lea County, N. Mex. (Sept. 29, 1933)	.75
Maljamar (Sept. 29, 1933)	.70
Artesia-Jackson (Dec. 1, 1933)	.75

Gulf Coast

Grade A and Grade B specification discontinued by leading buyers.	(See gravity table)
Hardin (Aug. 8, 1935)	$ .93
Tomball (see note)*	1.15
Livingston (Sept. 29, 1933)†	1.00
Cleveland (Jan. 11, 1934)	1.00
Gretz (June 29, 1935)	.80
Refugio, light	(See gravity table)
Refugio, heavy (June 29, 1935)‡	.80
Conroe	(See Conroe gravity table)
Markham and High Island	(See Gulf Coast gravity table)
Bosco, La. (Jan. 18, 1935)§	.90

Anahuac and Dickinson posted by Humble August 26, 1935, price of 94 cents per barrel on 30-30.9 gravity with 2 cents per degree increase with top 40 gravity $1.14.

Note — Tomball, effective September 29, by Humble Oil & Refining Co. and October 2 by Magnolia Petroleum Co., and November 10 by Stanolind Crude Oil Purchasing Co.

*Greta posted by Texas Co. †Shell Petroleum Corp. ‡Refugio heavy by Humble Oil & Refining Co. Cleveland and Hardin posted by Magnolia Petroleum Co. §Bosco posted by Pure Oil Co.

Middle Western States

OHIO OIL CO.

Lima (Feb. 1, 1935)	$1.15
Illinois (Jan. 5, 1934)	1.13
Princeton, Ind. (Jan. 6, 1934)	1.13
Plymouth	Shut in
Midland, Mich. (Dec. 15, 1935)*	1.22
West Branch, Mich. (Nov. 7, 1935)	.96
Muskegon, Mich.	1.00
Ogemaw, Mich.	.96
Somerset, Ky. (May 20, 1935)	1.13
Western Kentucky (May 22, 1935)	1.13

*Posted by Pure Oil Co., Simrall Pipe Line Co. Ogemaw and West Branch, Mich., posted by Simrall Pipe Line Co., Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and posted prices includes premium. Muskegon posted by Naph-Sol Refining Co.

North Louisiana and Arkansas

Smackover, Ark. (all grades)	$ .70
Tullos, Urania, La. (Jan. 13, 1934)	.57
Nevada, Ark. (Sept. 29, 1933)	.60
East El Dorado (Sept. 29, 1933)	.70
Converse, La. (Mar. 17, 1934)	1.03
Elm Grove, La. (Sept. 29, 1933)	.75
Holly, La. (Nov. 17, 1934)	1.03
Pleasant Hill, La. (Mar. 17, 1934)	1.03
Zwolle, La. (Mar. 17, 1934)	1.03
Champagnolle, Ark. (Mar. 17, 1934)	.81
Lisbon, Ark. (Mar. 17, 1934)	1.03
Stephens, Ark. (Sept. 29, 1933)	.70
Urbana, Ark. (Mar. 17, 1934)	.60
Other fields	(See gravity table)

South Central and Southwest Texas

Darst Creek	$ .37
Mirando (June 29, 1935)	.75
Luling (Sept. 29, 1933)	.75
Pettus	1.05
Salt Flat	.87
Lytton Springs (Sept. 29, 1933)	.95
Duval County (June 29, 1935)	.75
Saxet (June 29, 1935)	.80
Port Lavaca (July 1, 1935)	.80

Eastern States

TIDE WATER PIPE CO.
(Effective Nov. 20, 1935)

Bradford, Pa.	$2.30
Allegany, N. Y.	2.30

SOUTH PENN OIL CO.
(Effective Nov. 20, 1935)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	$2.30
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.02
Pennsylvania Grade Oil in Eureka Pipe Line lines	1.97
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.82
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.82

PENNZOIL CO.
(Effective Nov. 20, 1935)

Pennsylvania Grade Oil in National Transit Lines:	
Group A — Includes Cochran, Franklin, Hamilton and Doolittle districts.	$2.37
Group B — Includes Titusville district.	2.34
Group C — Includes Turkey and Tidioute districts.	2.36
Group D — Includes Bear Creek and Porkey districts.	2.34
Group E — Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	2.31

Price depends on length of pipe line haul to plant at Oil City.

PURE OIL CO.
(Effective Nov. 20, 1935)

Cabin Creek, W. Va.	$1.97
Bradford Hollow, W. Va.	1.97
Kelly Creek, W. Va.	1.97

Canada

Ontario (Sept. 9, 1933):	
Petrolia*	$2.10
Oil Springs	2.17
Turner Valley (May 21, 1934):†	
Clear naphtha	2.55
Discolored naphtha	2.37
Crude oil, 50 gravity	2.19
Crude oil, 45 to 49.9	2.07
Crude oil, 40 to 44.9	1.59

*Imperial Oil, Ltd. †Imperial Oil, Ltd., and Regal Oil & Refining Co.

Mexico

Panuco*	$ .85

*F.o.b. ship, based on October transactions and exclusive of production and export taxes and bar dues.

Crude Prices by Gravities

Gravity—	1 Oklahoma and Kansas	2 North Texas, Central Texas and East Central Texas	3 North Louisiana and Arkansas	4 Gray County, Texas	5 Carson, Hutchinson and Moore Counties, Texas	6 Conroe, Texas	7 Salt Creek, Wyo.	8 Gulf Coast, Texas and Louisiana	9 Gulf Coast, Texas and Louisiana	10 Cotton Valley, Louisiana
Below 20	...	...	...	...	...	...	...	$.82	$.82	...
20-20.9	...	...	...	...	...	...	...	.84	.84	...
21-21.9	...	...	...	...	...	...	...	.86	.86	...
22-22.9	...	...	...	...	...	...	...	.88	.88	...
23-23.9	...	...	...	...	...	...	...	.90	.90	...
24-24.9	...	...	...	...	...	...	...	.92	.92	...
Below 25	*$.76	...	...	...	...	...	...	...	...	$.70
25-25.9	*.78	...	...	...	...	...	...	.94	.94	.72
26-26.9	*.80	...	...	...	...	...	...	.96	.96	.74
27-27.9	*.82	...	...	...	...	...	...	.98	.98	.76
28-28.9	*.84	...	...	...	...	...	...	1.00	1.00	.78
Below 29	.84	$.79	$.79	...	...	...	$.84	1.02	1.02	...
29-29.9	.86	.81	.81	...	...	...	.86	1.02	1.02	.80
30-30.9	.88	.83	.83	...	...	...	.88	1.04	1.04	.82
31-31.9	.90	.85	.85	...	...	...	.90	1.06	1.05	.84
32-32.9	.92	.87	.87	...	...	...	.92	1.08	1.06	.86
33-33.9	.94	.89	.89	...	...	...	.94	1.10	1.07	.88
34-34.9	.96	.91	.91	...	...	...	.96	1.12	1.08	.90
Below 35	...	...	...	$.79	$.69	...	...	...	...	...
35-35.9	.98	.93	.93	.81	.71	$1.09	.98	1.12	1.09	.92
36-36.9	1.00	.95	.95	.83	.73	1.11	1.00	1.12	1.10	.94
37-37.9	1.02	.97	.97	.85	.75	1.13	1.02	1.12	1.11	.96
38-38.9	1.04	.99	.99	.87	.77	1.15	1.04	1.12	1.12	.98
39-39.9	1.06	1.01	1.01	.89	.79	1.17	1.06	1.12	1.13	1.00
40 and over	1.08	1.03	1.03	.91	.81	1.19	1.08	1.12	1.14	1.02

Jack M. Clover, who has been assistant production superintendent for the H. F. Wilcox Oil & Gas Company, Tulsa, has been promoted to general superintendent of production to fill the vacancy left by the death of W. J. Morrison.

Thomas Mills, of Gowanda, N. Y., president of the Finance Oil Company, and Mrs. Mills are visiting friends in Pawhuska, Okla.

James Anderson, vice president of the Humble Oil & Refining Company, has been elected president of the Houston, Tex., Chamber of Commerce. Walter P. Pyron, executive vice president of the Gulf Production Company, was elected as a director.

STANDARD OIL CO. OF CALIFORNIA

Effective December 6, 1935, and met by all other purchasers. (Ventura Avenue posted by Associated Oil Co.; Rincon by General Petroleum Corp.) All gravities above those posted take highest posted price in the field.

Gravity—	Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canon	Athens Rosecrans Dominguez	Elwood Terrace	Torrance	Richfield	Kettleman Hills	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River Round Mountain	Mountain View	Midway-Sunset Elk Hills Buena Vista Hills	East Hills	Coalinga	Wheeler Ridge	Ventura Avenue	Rincon
14-14.9	$.75	$.74	$.73	$.74	$.75	$.71	....	....	$.75	$.71	....	$.71	$.72	$.73	....	$.65	....	$.65	$.65	$.65	....	....	....
15-15.9	.75	.74	.73	.74	.75	.71	....	....	.75	.71	....	.71	.72	.73	....	.65	....	.65	.65	.65	....	....	....
16-16.9	.75	.74	.73	.74	.75	.71	....	....	.75	.71	....	.71	.72	.73	....	.65	....	.65	.65	.65	....	....	....
17-17.9	.75	.74	.73	.74	.75	.71	....	....	.75	.71	....	.71	.72	.73	....	.65	....	.65	.65	.65	....	....	....
18-18.9	.75	.74	.73	.76	.75	.73	....	....	.75	.71	....	.71	.72	.73	....	.65	....	.65	.65	.65	....	....	....
19-19.9	.75	.74	.74	.77	.76	.75	....	....	.77	.73	....	.71	.72	.73	....	.65	$.65	.66	.66	.66	$.65	....	....
20-20.9	.76	.74	.76	.79	.79	.77	....	....	.78	.71	....	.73	.72	.73	....	.65	.65	.68	.71	.67	.65	....	....
21-21.9	.78	.74	.78	.81	.81	.79	....	....	.80	.71	....	.75	.72	.73	$.73	.65	.65	.71	.73	.69	.65	....	....
22-22.9	.80	.74	.80	.82	.84	.81	....	....	.81	.73	....	.77	.72	.77	.73	.65	.66	.74	.75	.71	.67	.73	.69
23-23.9	.82	.77	.82	.84	.86	.83	$.79	....	.83	.75	....	.79	.74	.79	.73	.65	.67	.77	.77	.73	.69	.75	.71
24-24.9	.84	.80	.84	.86	.88	.84	.81	....	.84	.77	....	.80	.76	.81	.75	.65	.69	.80	.80	.75	.71	.77	.73
25-25.9	.86	.82	.86	.87	.91	.86	.83	....	.86	.79	....	....	.78	.82	.77	.65	.71	.83	.82	.77	.73	.79	.75
26-26.9	.88	.85	.88	.89	.93	.88	.86	....	.88	.81	....	....	.80	.84	.79	.65	.73	.86	.85	....	....	.81	.77
27-27.9	.90	.88	.90	.91	....	.90	.88	....	....	.83	....	....	.82	.86	.82	.65	.76	.88	.88	....	....	.83	.79
28-28.9	.92	.90	.91	.92	....	.92	.90	....	....	.85	....	....	.83	.88	.84	.65	.78	.91	.90	....	....	.85	.81
29-29.9	.94	.93	.93	.94	....	....	.92	....	....	.87	....	....	.85	.90	.86	.65	.80	.94	.92	....	....	.87	.83
30-30.9	.96	.95	.95	.95	....	....	.95	....	....	....	....	....	.87	.92	.89	.65	.82	.97	.94	....	....	.89	.85
31-31.9	....	....	....	.97	....	....	.97	....	....	....	....	....	.89	.94	.91	.65	.85	.99	....	....	....	....	....
32-32.9	....	....	....	.99	....	....	1.00	....	....	....	....	....	.91	.96	.93	.65	.87	1.02	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	$.99	....	....	$.95	....	.93	.98	.95	.65	.89	1.04	....	....	....	....	....
34-34.9	....	....	....	....	....	....	....	1.01	....	....	.97	....	.95	1.00	.98	.65	.91	....	....	....	....	....	....
35-35.9	....	....	....	....	....	....	....	1.03	....	....	.99	....	.97	....	1.00	.65	....	....	....	....	....	....	....
36-36.9	....	....	....	....	....	....	....	1.05	....	....	1.02	....	.99	....	1.02	.65	....	....	....	....	....	....	....
37-37.9	....	....	....	....	....	....	....	1.07	....	....	1.05	....	1.00	....	1.04	.65	....	....	....	....	....	....	....
38-38.9	....	....	....	....	....	....	....	....	....	....	1.08	....	1.03	....	1.07	.65	....	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	1.11	....	1.05	....	....	.65	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.07	....	....	.65	....	....	....	....	....	....	....

Playa Del Rey prices f.o.b. their pipe line. Elwood Terrace prices f.o.b. ship.

Market Record of Active Oil Stocks Listed on New York Stock Exchange

Compiled by Carl H. Pforsheimer Co., 25 Broad Street, New York City, Members New York Stock Exchange and New York Curb Exchange

1935 High	1935 Low	Week ended Dec. 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	Dividends Paid in 1934	1934 High	1934 Low	1933 High	1933 Low
77¾	48½	3,000	73¾	71½	73½	Amerada Corp.	788,675	N.P.	50cQ	10-31-35	$2.00	55⅝	39	47⅝	18½
28	20½	54,800	26⅛	24	26	Atlantic Refining	2,664,904	$25	25cQ	12-16-35	1.00	35¼	21½	32½	12⅜
14¼	5⅜	60,000	14¼	13	13⅞	Barnsdall Corp. A	2,195,397	$5	15cQ†	2-1-36	....	10	5⅞	11	3
15⅝	3⅜	48,900	14½	13¼	13⅜	Columbia Gas & Elec.	11,610,036	N.P.	20c	11-15-35	‡ .25	19¼	6⅝	28⅛	9
11	6½	102,000	11	10¼	10⅜	Consolidated Oil Corp.	13,996,072	N.P.	14c	10-31-34	.42	14¼	7¼	15¾	5
30¾	15⅛	55,900	30¾	29½	29¾	Continental Oil of Delaware	4,682,722	$5	25c	1-31-36	.50	22¾	15¾	19⅝	4⅞
22½	11¾	16,200	22½	20¼	21⅞	General Asphalt	387,149	$10	25c	12-17-35	....	23½	12	27	4⅝
7	1½	18,600	6⅞	6¼	6⅜	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	5⅝	2½	7⅜	1⅞
1⅞	⅜	25,600	1⅛	⅞	⅞	Louisiana Oil Refining	1,302,158	N.P.	....	.....	....	3⅜	¾	4	⅝
18½	9½	33,200	18½	17	17¾	Mid-Continent Petroleum	1,857,912	$10	25c	12-2-35	.50	14¾	9⅛	16	3¾
20⅞	9	6,400	20⅛	18¼	18½	National Supply of Delaware	382,591	$25	....	5-15-31	....	21⅛	10	28⅝	4
14⅛	9¼	64,200	12⅝	11⅞	12⅝	Ohio Oil Co.	6,563,377	N.P.	15cSA	12-14-35	.45	15⅞	8½	17⅝	4¾
11⅜	6¾	5,500	10½	9½	10¼	Pacific Western Oil	1,000,000	N.P.	40c	11-30-34	.40	9⅜	5½	9½	3
1⅞	½	3,800	1⅞	1⅜	1⅜	Panhandle P. & R.	198,770	N.P.	....	.....	....	2½	⅝	4¼	⅝
37⅝	13¾	36,300	37½	36⅛	36⅜	Phillips Petroleum	4,154,687	N.P.	25c†	11-30-35	1.00	20¾	13⅜	18¾	4¾
12¼	6½	17,500	12¼	11⅝	12	Plymouth Oil Co.	1,050,000	$5	25c	3-30-35	75c & 4% Stk.	16¾	7¼	17⅝	6¾
16¼	5⅞	123,600	16¼	14⅜	15½	Pure Oil Co.	3,038,370	N.P.	....	9-1-30	....	14⅞	6⅛	15⅜	2½
48⅜	29½	600	47	46½	46⅝	Royal Dutch N. Y. shares	fl. 503,642,000	fl. 100	$1.70	8-1-35	1.35	39½	28⅝	39¾	17⅝
35⅞	20¾	8,900	32⅜	30½	31	Seaboard Oil of Delaware	1,244,283	N.P.	15cQ†	12-14-35	1.00	38⅜	20¾	43⅜	15
16½	5½	62,400	16½	15	15½	Shell Union Oil	13,070,625	N.P.	....	6-30-30	....	11½	6	11⅝	4
111	63⅛	1,300	110⅛	109	109¼	Shell Union Oil pfd.	400,000	$100	....	7-1-31	....	89	57	61	28½
18⅜	4¾	9,300	5¼	5	5	Simms Petroleum	461,688	$10	1.25 liq.	10-18-35	.55	17⅛	7¼	12⅜	4⅞
17½	6½	10,400	17½	15⅞	17	Skelly Oil	1,008,514	$25	....	12-15-30	....	11½	6	9⅞	3
15⅜	10⅝	182,400	14½	13½	13⅞	Socony-Vacuum	31,154,379	$25	15cQ	9-16-35	.60	19⅞	12½	17	6
38⅞	27¾	26,700	38⅜	37	37⅝	Standard Oil of California	13,102,900	N.P.	25c	12-15-35	1.00	42⅞	26½	45	19½
30⅝	23	71,600	30⅝	27½	30	Standard Oil (Indiana)	15,215,677	$25	25cQ	12-16-35	1.00	32¾	23¼	34	17
32	20	No sales ..	..	..	..	Standard Oil of Kansas	200,000	$10	50cQ	10-31-34	2.00	41	26	39⅞	12¾
50½	35¾	39,300	49¼	47⅝	48⅜	Standard Oil of New Jersey	25,856,081	$25	50cSA†‖	12-16-35	1.25	50⅛	39¼	47½	22¾
77	60½	1,900	72	69½	70	Sun Oil	1,733,013	N.P.	25c¶	12-16-35	$1 & 9% Stk.	74¼	51½	59	35
26⅝	16½	53,500	26⅝	25¼	26¼	Texas Corp.	9,486,417	$25	25cQ	1-1-36	1.00	29⅜	19⅞	30⅛	10¾
9¼	3¼	11,500	8⅝	7¾	7¾	Texas Pacific Coal & Oil	880,703	$10	....	12-31-29	....	6½	2½	6½	1⅜
13¼	7⅝	62,600	13¼	12	13⅛	Tide Water Associated	5,632,136	N.P.	....	2-16-31	....	14⅜	8	11¾	3⅛
104½	84	1,700	102	100⅝	101½	Tide Water Associated pfd.	666,524	$100	$3§	1-2-36	§8.50	87	64½	65¼	23½
22⅜	14⅜	13,300	22⅜	21⅛	21⅝	Union Oil of California	4,386,070	$25	25cQ	11-9-35	1.00	20½	11½	23⅜	8½
26½	20½	1,600	23½	22¾	23	Union Tank Car Co.	1,200,000	N.P.	30cQ	12-2-35	1.20	25¾	15⅝	22¾	10½
3⅛	1	8,000	3⅛	2⅝	3⅛	Wilcox Oil & Gas	424,839	$5	....	5-10-28	....	5¾	2	5½	2

*Ex-dividend. †Plus extras. ‡Payable in preferred stock. §On account of accumulation. ‖Dividend 4/75 Mission Corp. paid 3-15-35. ¶and 7 per cent stock.

Market Record of Active Oil Stocks Listed on New York Curb

Compiled by Carl H. Pforsheimer Co., 25 Broad Street, New York City, Members New York Stock Exchange and New York Curb Exchange

1935 High	1935 Low	Week ended Dec. 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	Dividends Paid in 1934	1934 High	1934 Low	1933 High	1933 Low
13¼	3¾	3,400	12⅞	12	12⅛	Bridgeport Machine Co.	150,000	N.P.	....	5-1-30	....	3¾	½	1½	¼
42½	30½	150	40½	40	40½	Buckeye Pipe Line Co.	200,000	$50	75cQ	12-14-35	$3.00	38	26	29¾	25
4¼	1⅝	7,600	3⅛	2¾	2¾	Carib Syndicate	799,020	25c	....	.....	....	5½	1½	7¾	¼
157	115	100	122½	122½	122½	Chesebrough Mfg. Co.	120,000	$25	$1Q†	12-27-35	11.50	150	116	129	71
3¼	¾	53,700	2¾	2⅜	2⅜	Cities Service	37,804,394	N.P.	....	6-1-32	....	4¼	1¼	6¼	1½
2⅛	½	4,200	⅛	⅛	⅞	Colon Oil	2,200,000	N.P.	....	.....	....	3¼	½	4	¼
1½	¼	5,800	1⅜	¾	¾	Cosden Oil	399,687	$1	....	.....	....	3⅞	½	3⅞	1⅜
23¾	10	22,000	22⅞	21⅜	21⅜	Creole Petroleum	6,974,356	$5	....	.....	....	14⅜	9⅝	12	4¾
8¼	4	1,700	8¼	8	8	Darby Petroleum	509,696	$5	25cSA	1-15-36	.50	7½	4⅛	8	2⅛
2	¾	1,900	1¾	1½	1¾	Derby Oil & Refining	263,162	N.P.	....	.....	....	2¼	1	2¾	⅞
38	33¼	No sales ..	..	..	..	Eureka Pipe Line	50,000	$50	$1Q	8-1-35	4.00	37	30	41¾	20
74⅞	50¼	10,700	70¾	69	70	Gulf Oil Corp.	4,538,101	$25	....	10-1-31	....	76¾	49¾	62	24
64	44	12,900	60⅞	58¾	60¼	Humble Oil & Refining (new)	8,923,935	N.P.	25cQ	10-1-35	§1.25	49½	33¼	105½	40
22½	15⅜	9,800	20⅜	19⅞	20⅜	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	12-2-35	.92½	17⅞	12⅝	15⅞	6½
6¼	3⅝	100	5½	5½	5½	Indiana Pipe Line	300,000	$10	15cSA†	11-15-35	.35	6⅞	3⅝	8	3⅛
39¾	28	9,700	35⅞	34⅜	35½	International Petroleum	14,247,088	N.P.	$1.25†‡	12-2-35	2.28	33⅜	19⅜	23½	8⅞
11⅜	4⅜	24,100	10⅝	9⅞	10⅛	Louisiana Land & Exp.	3,000,000	N.P.	....	.....	....	5	2⅛	2¼	⅞
8¼	3½	1,200	8¼	8	8	Lion Oil Refining	270,000	N.P.	....	10-27-30	....	6	3⅜	9½	1¼
10⅞	4½	5,800	9¾	9	9⅜	Lone Star Gas	5,382,723	N.P.	20cSA	1-15-36	‖ .16	8⅜	4¼	11⅞	4¾
5⅜	4⅛	4,300	5¾	5⅜	5⅜	Mountain Producers	1,682,182	$10	30cSA	12-31-35	.60	5½	4	6½	2½
20	11¾	9,200	19½	18½	18½	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-36	1.00	18⅛	13½	20	10
10½	6¾	400	9⅞	9¼	9½	National Transit	509,000	$12.50	35cSA	12-16-35	.75	9½	7	10	5½
3½	2	1,200	3⅛	3	3⅛	New Bradford Oil	1,445,202	$5	10cSA	9-16-35	.20	2½	1¾	2⅛	½
2½	1	600	2¼	2	2	New Mexico and Arizona	1,000,000	$1	....	.....	....	2¾	1	1⅞	½
4⅞	3	No sales ..	..	..	..	New York Transit	100,000	$5	15cSA	4-15-35	.30	4¾	3	4⅞	3
8	5½	No sales ..	..	..	..	Northern Pipe Line	120,000	$10	25cSA	2-2-36	.50	7	4⅝	6⅛	4¼
4⅜	1¼	61,800	4⅛	3¾	3⅞	Pantepec Oil	1,608,700	N.P.	....	.....	....	2⅝	⅞	3¾	½
2½	⅝	1,200	2½	1¾	2¼	Ryan Consolidated	296,931	N.P.	....	.....	....	3⅜	⅞	4¼	⅝
7½	5½	5,400	7⅜	6⅝	6⅝	Salt Creek Producers	1,496,859	$10	40cSA	12-31-35	.80	7⅞	5½	9¼	3½
32½	21⅝	2,200	32½	31⅝	32	South Penn Oil	1,200,000	$25	30cQ	9-30-35	1.20	26½	17½	22⅛	11
5	3⅞	600	4¾	4½	4½	Southern Pipe Line	100,000	$10	15cSA	9-3-35	.25	5½	3½	6	2⅛
56	44¼	1,500	56	52½	52½	Southwest Penna. Pipe Lines	35,000	$50	$1Q†	12-31-35	5.00	47	41	43	24½
24	18	2,200	21¼	20⅞	21¼	Standard Oil of Kentucky	2,604,790	$10	25cQ†	12-14-35	1.50	18⅜	14⅝	19¼	8⅜
12	7¾	900	12	11⅝	11⅞	Standard Oil of Nebraska	188,403	$25	....	6-20-34	.50	16⅞	8¼	20½	11
23⅝	11½	5,300	23⅝	22	22	Standard Oil of Ohio	753,740	$25	....	1-3-33	....	28½	12¼	41	15½
2⅞	⅞	5,100	2½	2⅜	2½	Sunray Oil	1,610,810	$1	....	4-15-31	....	2	⅛	1½	¾
4¾	2½	45,500	4¾	4	4¼	Texas Gulf Producing Co.	888,041	N.P.	....	12-29-34	10% Stk.	.7	3⅜	6½	3¾
6⅞	5	2,300	6¼	6	6	Texon Oil & Land	336,028	N.P.	15c	12-30-35	.90	11	4⅜	13¾	6¼

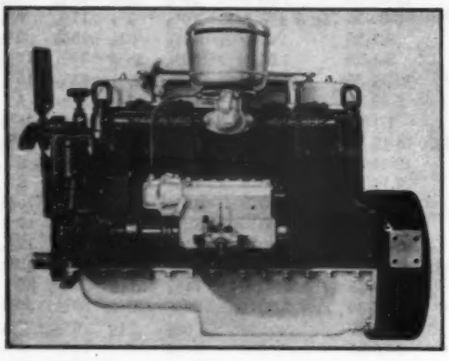
*Ex-dividend. †Includes extras. ‡Payable in Canadian funds. §Includes 50 cents on old $25 par value stock. ‖Payable in preferred stock.

Note.—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

NEW OR IMPROVED EQUIPMENT

Hercules Introducing Series of High-Speed Diesel Engines

As another step in its program to develop a complete line of high-speed six-cylinder diesel engines paralleling in performance and installation dimensions similar displacement Hercules gasoline engines, Hercules Motors Corp., Canton, Ohio,



announces the series DJX diesels. The smallest in the series, the DJXB, has a 3½-inch bore, 4½-inch stroke, and 260-cubic-inch displacement. The DJXC has a bore of 3 11/16-inch and 4½-inch stroke, with 288-cubic-inch displacement. On the dynamometer the DJXB is rated 79 horsepower and the DJXC 82.5 at an engine speed of 2,600 r.p.m.

This series of diesel engines is interchangeable with the Hercules JX series of gasoline engines, thus providing manufacturers the opportunity to supply either gasoline or diesel engines in their equipment without any mounting complications. This follows the same practice that prevails in the two larger models of Hercules diesel engines and the companion gasoline models.

The general design follows that developed by Hercules in its two larger diesels, the DHXB 5x6-inch, and DRXB 4⅝x5¼-inch, including the patented auxiliary combustion chamber, which assures complete combustion, controlling also the burning of the fuel and results in smooth, powerful, flexible and economical performance. This precombustion chamber, designed and patented by Hercules, is located at the side of the cylinder bore, and the "throat" which connects the cylinder with the chamber is so designed that the piston on its approach to top center on the compression stroke gradually reduces the throat area, thus automatically increasing the velocity of air entering this chamber, at the time fuel is injected, insuring thorough mixing of fuel and air.

Here and There With Men Who Manufacture Equipment

Fred R. Shumack, formerly with Dabney-Johnston Oil Corp. and previously with the National Supply Co. for 20 years, has joined the staff of the Lane-Wells Co. in its Los Angeles office as purchasing agent. F. A. Taylor has been transferred to the sales department.

Fred Matheis, for many years with Thermoid Rubber Co., Trenton, N. J., has been made assistant vice president, managing the office of the mechanical rubber goods division. Lloyd Weaver, formerly vice president in charge of sales of that division, is no longer in the company's service. S. H. Lyons has been made eastern manager of this department.

District sales managers recently appointed by Republic Steel Corp. include C. A. Cherry, Buffalo, N. Y.; Paul R. Johnston, Cincinnati, Ohio; Robert J. Working, Birmingham, Ala.; and George E. Clifford, Los Angeles, Calif. Charles W. East, formerly of the Birmingham office, has been made assistant manager of sales in the pipe division.

Work on the enlarged plant of the D + B Pump & Supply Co. in Dallas, Tex., has made such progress that Charles D. Wagner, vice president and general manager, says it is expected to start on a regular schedule not later than January 1 for the manufacture of D + B pumps and pump-fittings and sucker-rods.

G. H. (Doc) Wallace has joined K. S. Richards, 143 North Rock Island Avenue, Wichita, Kans., in the sale of Atlas Imperial diesel engines. He was with the Atlas factory for years.

The Babcock & Wilcox Co. has transferred its Refractories division sales office for the southeastern district from Atlanta to Augusta, Ga.

Orders for new equipment embodying late developments in machinery and machine tools, have been placed with 12 American manufacturers by Pittsburgh Equitable Meter Co., and its subsidiary, Merco Nordstrom Valve Co.

Struthers-Wells Co. has removed its New York office to the R.C.A. Building, 30 Rockefeller Plaza.

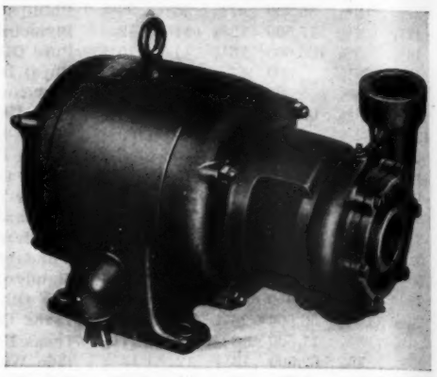
Men Widely Known in the Equipment Field

E. W. Goetz has been appointed sales representative of Cameron Iron Works, Inc., Houston, Tex., and Rector Well Equipment Co., Fort Worth, Tex. Mr. Goetz will represent both companies in the North Louisiana territory, with headquarters at 2719 James Street, Sherveport. He served 10 years in the warehouse department of the Gulf Production Co. and affiliated interests, and later gained wide experience in the equipment branch of the oil industry while serving as representative for oil tool manufacturers.

E. W. GOETZ

Nonclogging Centrifugal Pump Announced by Worthington

Open-impeller nonclogging centrifugal pumps for handling solid materials in suspension, gritty liquids, liquids containing stringy material, etc., are now being made in a wide range of sizes by



the Worthington Pump & Machinery Corp., Harrison, N. J. The pumps are of rigid "Monobloc" construction. They are compact, the greatest overall length of the largest size being only 23 inches.

The shaft of large size, extra-heavy-duty grease-lubricated ball bearings, rugged casings, stuffing-box of ample depth arranged for water or independent seal, water thrower ring, splash-proof motor, fan for air circulation, and protecting apron on motor are some of the details that characterize these units. They are available in all-iron, all-bronze, or bronze-fitted, and for special services. Ratings range from 10 to 250 g.p.m. against heads of 10 to 100 feet; one-half to 7½ horsepower; 1,500 to 3,600 r.p.m.; AC or DC; 50 and 60-cycle; single-phase or polyphase.

Gaso Adding to Equipment

The Gaso Pump & Burner Manufacturing Co., Tulsa, has added four machines to its already large plant equipment and it is announced the company soon will place on the market a pump smaller than any it so far has introduced, especially adapted for service in core drilling and on pipe lines where a small capacity and high pressure are required.

Caterpillar Introducing Four New Diesel Tractor Models

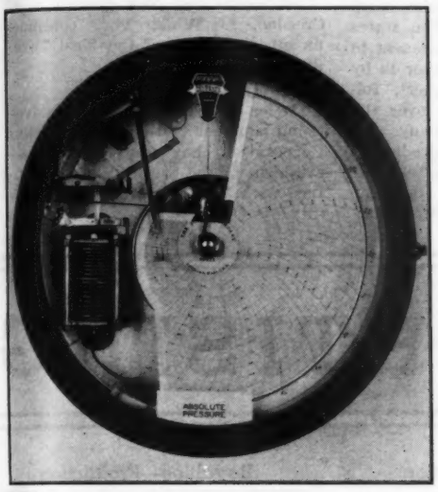
Caterpillar Tractor Co., Peoria, Ill., is introducing four new diesel tractors, the RD-8, RD-7, RD-6 and RD-4, and a spark ignition machine called the Thirty. The first three models succeed the Diesel Seventy-Five, Diesel Fifty and Diesel Forty and are comparable with them in everything except that they achieve greatly increased power through an increase in cylinder bore from 5¼ to 5¾ inches and improvements in the engine and fuel injection system.

The new RD-4 and Thirty are companions in outer dimensions, chassis, transmission and tracks. Many engine parts are also interchangeable. The new machines have higher ground clearance (11⅝ inches) and less overall height (5 feet five-eighths inches) than the old Thirty tractor. The diesel weighs only 400 pounds more than the new Thirty and almost 300 pounds less than the old. This reduction in pounds per horsepower is considered a major achievement in diesel tractor design. The RD-4 consumes only 1¼ gallons of low-cost fuel oil an hour. The old Thirty tractor burns about

4 gallons of gasoline per hour and its greatest speed is 3.6 miles per hour. The machine is expected to find wide oil-field use.

Absolute-Pressure Gauge Now Being Offered by Foxboro

The Foxboro Co., Foxboro, Mass., announces development of a new gauge to measure absolute pressure. This instrument has a unique method of compensating for changes in barometric pressure that assures correct readings at all times. The pressure measuring and barometric compensation units are mounted together, forming a complete, rugged and integral actuating movement. Two hydrons, one measuring direct pressure and the other barometric pressure, are so connected that their pressures directly oppose each other. The compensating hydron, which is sealed under full vacuum, exactly counterbalances the barometric



effect on the main pressure hydron, enabling that hydron to measure only absolute pressure.

This method of measuring absolute pressure is comparable with the manometer method of measuring differential pressure, whereas previous methods could be likened to the method of using two pressure gauges for the same purpose. In the latter case a small error in either the pressure readings amounts to a large percentage of the difference. The gauge is protected against overrange, is light and portable, and contains no liquid to spill or lose its seal. It can be equipped with the Foxboro Stabilog mechanism and used for control.

Bulletins, Booklets and Other Literature for the Trade

The current number of Nickel Cast Iron News, published by the International Nickel Co., New York, contains an interesting article on pipe line pump castings which stand a pressure test of 1,500 pounds and one on high-test cylinder-heads for oil engines.

A bulletin on arc welding supplies announced by the Lincoln Electric Co., Cleveland, Ohio, describes the company's new quickly detachable cable connector, which cannot work loose or be pulled apart accidentally.

In its historical series of articles on wrought iron the current issue of the Reading Puddle Ball, published by the Reading Iron Co., Philadelphia, Pa., tells interestingly of "Wrought Iron in Islam."

"Interesting Installations" is the title of a 28-page profusely illustrated booklet obtainable from South Bend Lathe Works, South Bend, Ind.

A handy reference bulletin on centrifugal pumps for virtually every purpose has just been published by Morris Machine Works, Baldwinsville, N. Y. While the bulletin is intended primarily to illustrate and list the various designs of Morris pumps, hydraulic dredges and steam engines, it is practically a guidebook of centrifugal pumps.

The Tag No. 40 controller is described in a bulletin by C. J. Tagliabue Manufacturing Co., Park and Nostrand Avenues, Brooklyn, N. Y.

The new 112-page general catalog on Macwhyte wire rope sent on request by Macwhyte Co., Kenosha, Wis., is easier to handle because of spiral binding and more useful because of an information section.

Quimby Pump Co., 340 Thomas Street, Newark, N. J., is distributing a bulletin on Quimby Rotex pumps, particularly applicable to refinery use.

A new line of cut-tooth worm-gear speed-reducers is described in a 40-page illustrated catalog offered by Link-Belt Co., 2045 West Hunting Park Avenue, Philadelphia, Pa. Dimensions, service factors, horsepower ratings and engineering data for selection of the right unit are given.

A folder available from Dearborn Chemical Co., 310 South Michigan Avenue, Chicago, tells about Dearborn tannin brick treatment, designed to reduce losses from scale and corrosion.

The new model 30 Cletrac is the subject of a bulletin published by the Cleveland Tractor Co., Cleveland, Ohio.

The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., has printed a second edition of its catalog covering belting, hose, packing, molded goods, friction material, rubber coverings, abrasive wheels, etc. New bulletins are available on Condor compensated, the low-tension rubber belt, Condor whipcord V-belts, and Condor whipcord endless transmission belts.

A request sent to Hercules Motor Corp., Canton, Ohio, brings a 6-page bulletin describing what the company designates as the "smallest high-speed 6-cylinder diesel engines."

A 16-page bulletin offered by Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York, is devoted to CP diesel engines, type RHB.

Wilson Arc Welder on Trailer Stands Vicious Treatment

The welding machine pictured, a Wilson gas-engine-driven 300-ampere arc welder mounted on a rubber-tired truck trailer, has made a three-month jaunt around the country, covering all the Airco districts east of the Rockies except Minne-

apolis, and standing up under vicious treatment. It was towed 10,000 miles over almost every kind of road, concrete, dirt, bad detours and mud. Sometimes the highest speed possible was 6 to 8 miles an hour. Rain, snow, sleet, dust storms and temperatures that varied from 86 degrees to 4 degrees below zero added to the trying conditions, and the machine is reported to have stood all of them without a cent of expense for maintenance repairs.

The machine was exhibited at 65 different shows, in charge of 14 different men. At each show 50 to 150 men used the machine with every type of rod carried by the Air Reduction Sales Co., and practically each man changed voltage and amperage in rapid succession.

Rustproofing With Cromodine

Cromodizing, a new process developed by the American Chemical Paint Co., of Ambler, Pa., is said to prevent rust from forming beneath paint films, keeping steel units in serviceable condition. Cromodizing is adapted to protecting any type of steel surface regardless of size, shape or previous processing. To obtain this type of protection, steel products are dipped in a bath or sprayed with a solution of a chemical called Cromodine.

Members of Merco Nordstrom Valve Co.'s sales divisions from different parts of the country recently concluded a tour of the California oil fields and a sales conference of several days at the organization's manufacturing plant in Oakland, Calif. Bottom row, left to right: S. T. Poliak, manufacturing standards department, Oakland; M. H. Weston, sales department, New York; P. S. Williams, plant manager, Oakland; James Baker, sales department, Houston, Tex.; F. K. Spurrier, research, Oakland; E. E. Matheson, district manager, San Francisco; A. J. Kerr, manager Mid-Continent area, Tulsa. Center row: R. F. Cleary, manufacturing cost department, Oakland; F. H. Ricker, production manager, Oakland; L. A. Dixon, vice president, Pittsburgh, Pa. Top row: G. F. Scherer, director of research, Oakland; J. L. Walden, production department, Oakland; E. E. Hedene, chief engineer, Oakland; Walter H. Davis, vice president, Oakland; Col. W. F. Rockwell, president, Pittsburgh, Pa.; S. J. Nordstrom, consulting engineer, Oakland; W. J. Menefee, purchasing department, Oakland; Russ Waters, sales department, Bakersfield, Calif.; C. H. Wyman, sales department, Chicago; H. Boezinger, district manager, Los Angeles.

Chicago Market

CHICAGO, Dec. 16.—Optimism prevails in numerous quarters of the central states over the outlook for the general oil marketing situation in the coming months. One of the reasons for this is the expectation that betterment will grow out of the plans to revamp the gasoline marketing structure, which has been widely discussed here and elsewhere recently. Elimination of a flat dealer discount and other changes now being studied by trade executives are finding much favor and are believed to promise much relief in the long-unsettled marketing conditions in this region.

From a current gasoline market standpoint, conditions are firm. The firming of the last two weeks has been accomplished in a distinctly contraseasonal fashion. Offerings have been absorbed, and while this has been accomplished to a large extent by interrefiner buying, not all of it has resulted from that type of purchases. Of course jobber buying is somewhat restricted by weather conditions, but shipping instructions have been coming in on contract in the last 10 days more briskly than was expected.

Current quotations from refiners indicate the tank car motor fuel market is extremely tight. Little of any kind of gasoline is reported available except some rather low gravity material reported out of a few sources. Michigan gasoline is not disturbing the general middle western price situation, and the same is true of other Michigan products.

Interest in Natural

There is an active interest in the trade in natural gasoline. This seems true of jobbers as well as majors, a number of which are pepping up their regular grade material for winter, and a few of which have been merchandising their top premium products under new plans for winter acceptance.

The trade is paying much attention to the growing strength in crude prices. Refiners are watching the situation to enable them to make prompt reflection in their tank car prices, of any possible crude advance. There is divergence of opinion here, although the bulk of the belief is that an advance in crude, assuming it comes, will be deferred until after the first of the year.

Tank wagon and service station markets are quiet and a little more stabilized, although bad conditions persist in numerous larger cities and in Michigan and in Kansas.

Kerosene is now a little spotty. Average prices show little change, but there is irregularity. Takings have been on a fairly good basis.

Heating Oils Strong

Heating oils have been steadily picking up strength. Distributors have been buying somewhat more actively, only to find that buying has not been equivalent to obtaining shipment. Some sources of supply are far behind, even though weather has not been on the average quite as cold as normal.

Five-Day Week

CHICAGO, Dec. 16.—Standard Oil Co. of Indiana is adopting the five-day week for its general offices, refinery offices and sales division headquarters in its 13 midwestern states as a regular policy. Announcement to this effect was made December 14 by President Edward G. Seubert, following a trial of the plan over the last 18 months. The company will continue the five-day week indefinitely. It was stated directors believe general adoption in industry and trade of this plan for office employes will speed recovery.

Instead of having only the afternoon free Saturday, Standard office employes have the entire day, although a skeleton staff is retained for emergency service. The schedule represents only a rearrangement of hours, since employes concerned put in 40 hours as they did on a five and one-half day week.

The five-day week originally was authorized in response to requests by representatives of employe groups in the Chicago, Detroit, St. Louis and Quincy, Ill., offices of Standard.

James N. Dunleavey, of the Skelly Oil Company, Tulsa, has been advanced to superintendent of production in the New Mexico division of the company, the Permian Basin area having been split into two divisions, West Texas and New Mexico. J. C. Creeden, of Wink, Tex., continues as superintendent of the West Texas division.

Lucien P. Locke, former advertising manager of the Ethyl Gasoline Corporation, has been elected vice president of the Outdoor Advertising, Inc., with headquarters in New York City.

CLASSIFIED ADVERTISING

Royalties—Production

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Securities and Exchange Commission. Inquiries invited.

B. D. BUCKLEY

Paul Brown Bldg., St. Louis, Mo.

Income Producing Royalties
Mid-Continent Field
Harry A. George
427 Perrine Bldg., Oklahoma City, Okla.

PRODUCING OIL ROYALTIES
(ALL FIELDS)
Bought, Sold and Quoted.
HENRY L. BAKER CO.
207 Van Nuys Bldg.,
Los Angeles, Calif.
Telephone Trinity 7391.

PRODUCING OIL ROYALTIES
for dealers.
H. P. BOWEN
812 Kennedy Bldg., Tulsa, Okla.

HIGH GRADE producing oil and gas royalties offered to dealers. Billie Smallwood, P. O. Box 2261, Tulsa, Okla.

WITWER'S OIL ROYALTIES
Producing & Non-Producing.
L. H. Witwer
P. O. Box 2453 Tulsa, Okla.
505 First Natl. Bldg., Okla. City, Okla.

WINKLER COUNTY ROYALTY—BLK. 3 & 5. Private owner desires to sell nonproducing holdings. If interested write P. R., 17 Howell Pl., Kearny, N. J.

Royalties—Production

FRED T. HILDT
National Bank of Tulsa Building,
Tulsa, Oklahoma.

Dealers Orders for Mid-Continent Oil and Gas Royalties filled.

ROYALTIES SINCE 1917

I BUY AND SELL oil royalties and producing wells, East Texas field. B. A. SKIPPER, Longview, Texas.

ROYALTY (adjoining Stanolind lease now being drilled) ½ mile to gas well. Will drill spring 1936. 143 Northbeech, Casper, Wyoming.

Royalties—Production

ROYALTIES and leases in all fields, producing and nonproducing, Kans., Okla., Tex. Get my list before buying. JAMES R. HAYNES, Grantville, Kans.

Producing and Non-Producing Royalties.
Bosco, Van, Rodessa, West Texas.
Wholesale — Retail.
W. E. HOUSEL
76 Beaver Street, New York City.

8,960 ACRES valuable oil lands, western Pecos County, Texas, will be foreclosed on for $15,500.00 unless payment is made by Jan. 31, 1936. I will deliver fee simple title, subject to state debt, to 5,000 acres for amount of mortgage. Address Box G-923, The Oil and Gas Journal, Tulsa, Oklahoma.

Royalties—Production

FREDERICK A. SANSOME
AND COMPANY
522 Fifth Avenue
NEW YORK, N. Y.
Will buy, sell or quote.
Oil Interests. Wholesale Only.

Registered Royalties and Non-Registered Royalties available to Dealers only.

CHESTER IMES

First National Building,
Oklahoma City, Okla.

BETTER CLASS
MONTHLY PAYING ROYALTIES
Quoted Dealers Exclusively.
W. E. COOK
Suite 812, Palace Bldg., Tulsa, Okla.

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

VAN POOL — EAST TEXAS
Bought — Sold — Wholesale.
W. R. Brown & Co., Inc.
14 Prospect Pl., East Orange, N. J.

PRODUCTION, Royalties or leases, direct from owners, any part Texas Panhandle. Put your cards on with me and I will be glad to give you full benefit of my knowledge of values, etc., gained from 30 years' trading in this territory. Confidential reports can be had on any property very reasonable. E. B. Reeves, Box 475, McLean, Gray Co., Texas.

Van—East Texas—Louisiana Royalties
Bought—Sold.
WILLIAM MONROE LAYTON
67 Wall St,, Suite 1510, New York City.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*
1 Inch	*13 times*	*4.50 per inch*
1 Inch	*26 times*	*4.00 per inch*
1 Inch	*52 times*	*3.50 per inch*

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY

CLASSIFIED RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line. PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*
7 Lines	*$2.45*	*$4.20*	*$5.95*	*$7.70*
8 Lines	*2.80*	*4.80*	*6.80*	*8.80*
9 Lines	*3.15*	*5.40*	*7.65*	*9.90*
10 Lines	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma